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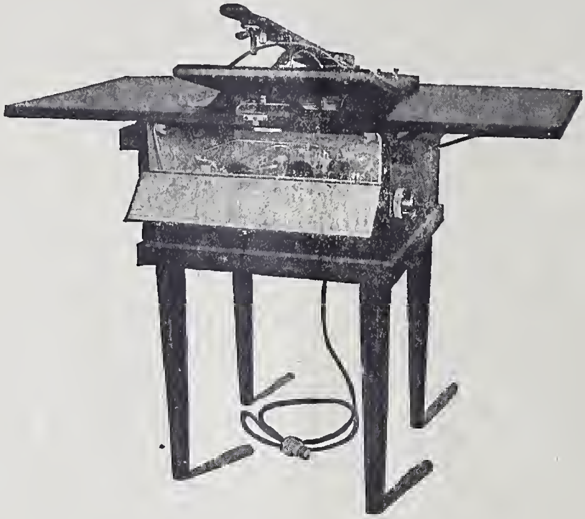

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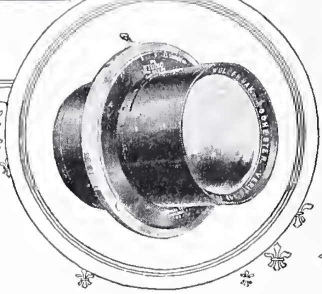

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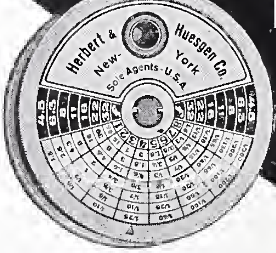

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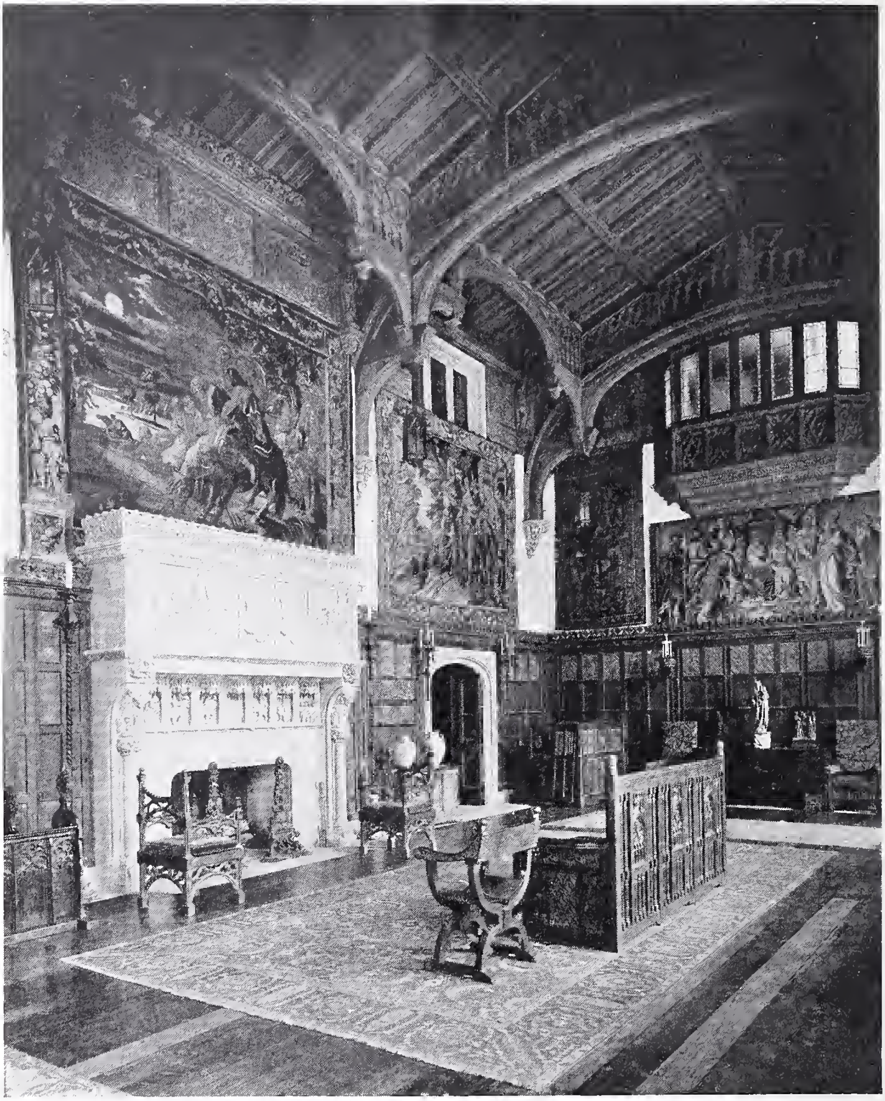

BY MATTIE EDWARDS HEWITT
NEW YORK CITY

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VOLUME LVII JUNE, 1920 NUMBER 6

THE AUTHORITY FOR THE PROFESSIONAL PHOTOGRAPHER
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BALANCE AND HARMONY IN PORTRAITURE

By "PROFESSIONAL"

THE best lines in the head and neck of a lady sitter are largely determined by intuition on the part of the operator. They must be found by turning the head in different positions and studying the effect in each. These lines, when correct, appeal to the æsthetic sense of the operator, and greatly influence the dignity of pose and sweetness of expression. It is sometimes advisable to be satisfied with the simpler Hogarth line of beauty, rather than to strive for the "S" line, if in so doing a discordant note in the perfect representation of the character of the sitter be struck.

The bending of the head, which is sometimes necessary to complete the extension of the "S" line, is frequently disastrous. If persisted in, even to a slight degree, without proper discrimination, it may change the portrait of a lady of refinement into the picture of a bold, coarse woman. Is it not true that in such a case as this the arrangement of line in the simple turn of the head emphasizes qualities that are often overlooked? Do not of necessity conclude, if a critical subject says her pictures do not resemble her, that she is either of necessity a crank or wrong in her belief. It does not always follow that because the lens will photograph the wart upon my lady's nose so faithfully, that these pictures showing this characteristic must of necessity look like her. You may simply have used wrong lines in the pose of the head, with the result that the portrait reflects her features in a manner unfamiliar either to herself or friends in daily life.

In addition to the face, the lines which form the hands may indicate coarseness, aggressiveness, daintiness, or other characteristics. "Art is beauty in some form or other, and the aim of art is to find and show this beauty." The hands have an important mission to perform in portraiture. The manner in which the fingers are interlaced, or the drapery held, etc., has much to do with the expression of beauty and character. It frequently will be found that the hands should show but slightly, if at all, particularly if not well formed and attractive. If shown, they should be in keeping with the personality of the subject. If efforts are made to show these characteristics in the portraits of the dainty, well-bred lady, do not fail to give the same attention to other characteristics of the figure, no matter how minor they may be.

Great importance attaches to the special training of the finishing schools for young women. In these schools are taught the principles of carriage and the art of walking, standing, and sitting with grace and ease. These matters are considered important in the school of society and should be recognized in the studio. Whenever evidences of this special training are apparent, it will usually be found advisable in photographing the sitter to allow her to pose herself. Such a pose will probably be more characteristic than the result of your attempt at arrangement. In cases where through diffidence or other reasons the sitter is unable to take a position both characteristic and artistic, a few simple suggestions may often accomplish the end desired.

I would add, in passing, that this method is the one most generally satisfactory in all posing, whether of men, women, or children, whenever it is possible to employ it. Its advantages are most important, however, in the posing of the head or bust.

All arrangement of the dress and drapery that can be properly left to the photographer should be attended to by him, particularly in the case of lady sitters. He should endeavor to accomplish results without ever touching the face of his sitter, and seldom the head. When necessary, however, the touch should be upon the top or back of the head, and never in front of the ears. Your sitter will mentally, at least, thank you for this delicate attention. We are not barbers, neither should we give our patrons the impression that we are akin to them.

In the general arrangement, all lines (except under certain well-understood conditions) should aim to give grace. This rule applies even to those lines that are mainly employed for the purpose of balance. By this we do not mean that curved lines only should be used. There is no greater aid to the expression of force and elegance in curved lines than the judicious employment of straight lines, by which their monotony is broken. Straight lines are, therefore, often very properly used in the treatment of backgrounds and lower parts of the picture.

Occasion may arise when curved lines, in connection with which are associated grace, beauty, delicacy, daintiness, etc., could be dispensed with, and abrupt, angular, and even proportionate strong "Z" lines substituted. The natural tendencies apparent in the make-up of individual sitters readily suggest the character of lines suitable to be employed. Care should be exercised in the employment of these lines that they be not too forceful. They must not dominate the sentiment, but support it. The student will find ample and excellent material in any good reproductions of the successful paintings of any age in art, for the study of lines and the power they possess in the interpretation of character.

As a general rule, or so it seems to the writer, straight lines, when employed in a composition, may, like salt upon partly seasoned food, be used sparingly. This applies to intensity of tone and size of line as well as number. When they appear in accessories, as, for instance, in a table or chair, to form a decided angle in strong tone effect, they may be modified by changing the position of the accessory or, as in the case of the table, by breaking the long and strong line of the edge by projecting something like a book over it, thus causing smaller counter-lines in other directions. It may also be assisted and always should be, if pictorial effects are studied, by a suitable background and subordination. Straight lines possess great strength of attraction, necessitating much more attention than the same tone qualities in curved ones.

The outside line of the figure, to cite a single instance, should always receive special treatment, that it may be symmetrical and merge or melt into the ground to some extent. This may be done by lighting the too prominent outline of the figure in a lower key, and by arranging the background at that part so that it too will be approximately of the same tone as that of the figure. This applies equally to the standing figure and the bust portrait. Lines should diminish in their power of attraction as they recede from the central point of interest, whether they are curved or straight.

Avoid undue repetition of lines of equal size and weight when in close proximity to each other. If not large nor too prominent, which may be the case if in a low key, they are quite harmless. If there be a multiplicity of them, however, and it be impracticable to change the arrangement of the composition, which is otherwise good, or even pleasing, do not mind them at this stage, but stick to the greater thing, and carry your scheme through. In one of Sir Joshua Reynolds' lectures to his students he makes a point which is quite applicable in this case. Its sense is to the effect that it is much better to be an inferior artist of the *grand style*, than a better grade artist of an inferior style, and that too much attention to petty and unimportant details with a loss of grandeur and style in the conception itself is a thing that should be guarded against. It is well at this time to recall this sentiment, lest we, in our efforts to apply art principles to our productions, stultify ourselves by undue attention to the lesser things. If we try to produce balance, rhythm, and harmony, their importance being in the order given, and keep this idea ever before us, an occasional lapse in less important principles will not prevent our work from doing us great credit. Worthy ambition and high ideals are much to be desired, and the goal which Reynolds advises his students to strive for is applicable to us as photographers.

In the instance above cited referring to the multiplicity of unimportant lines, if the advice to disregard them for the time being be adopted, their subsequent treatment may be effected and any undue importance modified by etching or rubbing out the most noticeable ones, thus relevating that part of the negative to the character of a mass or spot of proper tone, so that it will not in turn possess undue attraction. Of course, the changing of the character of this part of the negative and its relation to the whole has to be considered, but the composition is frequently improved in an æsthetic sense by this loss of detail and the gain of mystery and simplicity. If these lines are large and of equal size, they are likely to be very damaging and should receive careful attention. They should be subordinated in a mass of shadow to come at this place, or merged into some adjacent object, such as foreground, background or accessory of about the same tone. The composition is also improved by diverging balancing lines. The employment of some or all of these methods will be found to answer the purpose. The darker the lines, the more do they attract attention, especially if aided by contrasts, the effect being more noticeable as they increase in size. It is possible in arrangement to avoid this repetition in size of pronounced lines, and the difficulty of removing them is best obviated by care in arranging the composition. Unequal spaces between lines, unequal sizes of lines, and a breaking of their exact regularity in direction, does away with any damage that could result from their use. This applies whether they are straight or curved.

There seems to be a general understanding among photographers that parallel lines should always be avoided. Perhaps if slavishly used, this may be the case. There are occasions, however, when lines that appear parallel really do no particular harm in the picture. This, like many other things, depends upon the prominence they possess. If pronounced, they are hurtful and should be differently arranged. It is a mistake to think that lines that closely approach the parallel may never appear. They may often be used to advantage. A good thing to guide you is your sense of feeling which you are constantly training. If the lines distress you, change them till they no longer annoy you.

A lady's hands may be simply clapsed in her lap, very nearly approaching the parallel, yet they certainly add repose, and are much in keeping with many types of the feminine face. If they do not jar upon your sensibilities and the picture sense of quietude and simplicity is well interpreted by their presence, do not let this use of them prevent you from making the picture.

Without entering into a discussion at this time as to the "Silhouette" itself, I would mention that the greatest objection that has been raised by artists and critics to this picture is in the sharp and hard outlines formed against the background, more noticeable as the contrast is increased. Principles that are applicable will come under discussion later in these papers.

These lines as an aid to "concentration of interest" are more likely to act inversely and by their prominence draw attention from the pleasing things of the face or head to outlines which are often unpleasant. This is noticeably the case at times in the profiles of ladies, in the line from the chin down the neck and along the shoulder. The remedy is obvious. Grade the shade of the ground and light the face so that the excessive contrast is not so apparent. It will frequently be found advisable to change the scheme or usual method of lighting to obtain the desired result, and to employ the broad light in its full sense, which will remove the difficulty. Posing, the subject facing the light, the camera, itself, being backed up to the side light, permits the attainment of results not possible under other conditions. By slightly turning the figure, moving the camera up or down and alongside the side light, and placing the subject nearer or farther away from the light, will enable the photographer to obtain any effect of brilliancy, roundness, tone and color values, although at first thought only flatness would result. The lighting is very subtle and picturesque. In connection with the above, several tints of graded grounds on curtain rollers, that can be raised or lowered, will work in well, and all undue prominence of these lines in the silhouette may be remedied.

Rhythm of direction in the general tendency of important lines leading to or adjacent to the principal parts of the picture, and inclining as a whole toward the center of interest in the composition is important. As rhythm is the graceful carrying out of some form of motion, it is apparent that good rhythm will increase movement, and movement gives life to what may otherwise be an inert mass of unattractive lines. As interest is thus gained by this movement, only attainable by rhythm, it at once becomes apparent that the beauty of a portrait is much enhanced by this treatment, and the principle is of great value, to be understood and striven for by us all. Breach of rhythm is caused by lines running contrary to a general direction, which are impossible of union, and the breach becomes greater as the number and size of these lines increase.

One of the first things the student in photography hears in commencing "posing" is the much quoted phrase, "If you have a straight line here, have another one next, going the other way, to balance it," thus giving the impression that this must be slavishly followed. If this erroneous advice were literally followed, we would have most peculiar compositions, in fact grotesque, and rhythm and harmony would become impossibilities.

It must not be supposed, however, that all lines should run in exactly similar directions in the groups mentioned above, where they appear hurtful to the composition.

Among other things, monotonous effects have to be guarded against. Better composition is obtained if the general tendency is in this direction, and where slightly diverging lines run in and join other lines let their union be softened and practically lost, rather felt as joining than positively indicated.

The reader will recall many of the pictures of flower pieces where this theory is carried out, and he may view the decorative school of Japanese art with much profit in this sense. In the practice of photography avoid the use of small stops in lenses and light the subject either away from the strongest light, or screened by curtains, with a view to accomplishing this result while striving for color and tone values, atmosphere, and the like. In the arrangement these lines may receive attention and be made to melt in together and not brought into sharp outline against each other. Furthermore, recourse may be had to the various methods photographers now employ to remedy defects in the negative or print. A remedy for this and other difficulties is also possible by printing under transparent films imposed between the negative and paper. Vertical lines add dignity, horizontal lines repose, diagonal and opposing lines action.

PINHOLE EXPOSURE CALCULATIONS

By EDWARD B. MALLORY

IN the early days of the electric light, before the advent of photometers, illuminometers and other instruments of precision, it was customary for manufacturers to gauge the candle-power of incandescent lamps by mounting them on the ceiling of a high room, the walls and ceiling of which were painted a dead black, with no windows or openings to admit extraneous light. A human photometer, previously blindfolded to accustom the eyes to uniform darkness, was led into the room and the blindfold removed. By comparing the newly manufactured lamps with certain others, known as "standards," he spotted the various lamps of the same apparent brilliancy, the corresponding "candle-power" being marked on the lamps and the lamps sold according to this rating. In this day of highly developed photometers, capable of measuring illuminants and illumination with mathematical precision, it is quite evident that the human eye could hardly be expected to even approach the accuracy of the crudest photometer.

While physicists in general and the lens-makers in their laboratories have reduced lens design to an exact science, and the laboratories of the negative makers have largely succeeded in putting the "experience in the tank," yet photography as a science is, in many ways, about at the same state of the art as that occupied by the electrical industry in the days of the blindfolded "photometer"; at least a reader of current photographic literature would get this impression from the multitude of inaccurate and misleading statements published for the perusal and intended education of the followers of the art.

The relatively great latitude of plates, films, printing papers and reducing agents (developers), and the lack of accurate measuring instruments, is doubtless largely responsible for many inaccuracies as well as for the limited research work done in this country independent of the manufacturers. Everyone seems content to accept the art at its present state of development and leave technical worries to the manufacturers and posterity.

The efforts of the editors of photographic magazines to publish the results of practice and experiments by students of the art is heartily endorsed by all serious workers, but it is contended that authors of technical articles should exert every effort to reduce the findings and resultant theories to accurate dimensions as a step in the right direction in anticipation of the time when photography can rightfully be classed as an exact science.

It is not the intent or purpose of this discussion of the subject to criticise the findings or opinions of others. Figures and statements quoted herein, from published articles by other authors, are incorporated entirely for purposes of comparison by analysis, as the tyro undertaking pinhole photography can find as many values for calculating his exposures as there are authors on the subject.

Pinhole photography has been the subject of considerable experiment and investigation by the author, occasioned by failure at the outset to obtain satisfactory results by following the instructions supplied with a so-called "pinhole lens." The results of these early attempts led to a comparison of the values of pinholes as advocated by various authors, the relation between pinhole and lens apertures, and an analysis of the various factors involved. For purposes of illustration the comparisons in this discussion will be confined to the values advocated by Dr. D'Arcy Power and Mr. Alfred Watkins, apparently the most comprehensive writers on the subject.

Before undertaking the comparisons it is necessary that the formula for calculating the *f* value of any pinhole be understood. The following formula may have been used by earlier authors, but diligent search in published data on this subject failed to disclose a formula for calculating the *f* value of any pinhole, regardless of diameter; necessitating the construction of a formula applicable to all cases.

FORMULA 1

$$\frac{\frac{1}{d} \times K}{60} \times L = f \text{ value at 60 times lens exposure at equivalent } f \text{ value.}$$

wherein d = diameter of pinhole in inches.
L = distance from pinhole to negative in inches.
K = a factor varying with the ratings of various authors.

As modern exposure meters do not include *f* values of the actual proportions of those of the pinhole it becomes necessary and convenient to read the exposure in minutes or fractions of minutes instead of seconds or fractions thereof, the above formula providing *f* values accordingly.

Dr. D'Arcy Power, in *Photo-Miniature*, No. 70, has published what is probably the most interesting and instructive work on this subject, and full credit for reducing pinhole factors to some convenient workable basis should attend this work. It is contended, however, that exposures crowding the permissible minimum would result if very fast plates with small latitude were used, as will be evident from an analysis of his factors. The following table of pinhole sizes and corresponding factors, which, multiplied by the focal length, give the *f* values of the pinholes, is set forth by Dr. Power. For purposes of later comparisons the column giving the corresponding diameters in inches has been added:

TABLE 1

Pinhole number.	Diameter in millimeters.	Diameter in inches.
1	1.00	0.0394
2	0.75	0.0295
3	0.50	0.0193
4	0.375	0.0147

The use of the table is illustrated as follows: To take a certain landscape, No. 2 pinhole is selected, and 8-inch focal length is required. Accordingly, we have 2 × 8 = 16, the *f* value of the pinhole in this case, or if a lens at *f* 16 would require one-half second exposure, with the pinhole it would require one-half minute. In the text it is stated that, "Starting with the millimeter hole as No. 1, the rest diminish in such ratio that each passes half the light of the preceding." Do they according to the table?

In the first analysis let us take, for example, No. 1 and No. 2 pinholes. As the light passed by an aperture is proportional to the square of the diameter, we have $\frac{.75^2}{1^2} = 0.563$ and not 0.5 as stated, or by reversing the formula we have $\sqrt{\frac{1}{2}}^{\,2} = 0.707$, or to·pass half the light of hole No. 1 the diameter of hole No. 2 should be 0.707 mm.; similarly, hole No. 4 should be 0.353 mm.

Dr. Power gives, as the basis of his conclusions, an experiment in which a lens of 10½-inch focal length at *f* 32 exposed one second gave a negative identical (to the eye) to that obtained at the same time with a pinhole 0.45 mm. diameter exposed one minute, which expressed as an equation would be:

$$\begin{array}{c} \text{Lens.} \\ \left.\begin{array}{l} \text{10.5 in. focal length} \\ \text{11 in. from negative} \\ 32\ f \text{ value} \\ \text{1 sec. exposure} \end{array}\right\} \end{array} = \begin{array}{c} \text{Pinhole.} \\ \left\{\begin{array}{l} \text{.45 mm. diameter} \\ \text{11 in. from negative} \\ \text{60 sec. exposure.} \\ \end{array}\right. \end{array}$$

Reducing the apparent lens values to the effective values, $\frac{10.5}{32} = 0.328$, effective diameter of the lens opening in inches and $\frac{11}{0.328} = 33.5$ effective f value. Reducing the pinhole aperture to inches and expressing the effective f value, $\frac{0.45}{25.4} = 0.01772$, diameter of pinhole in inches and $\frac{11}{0.01772} = 621.5$, effective f value. Therefore the equation becomes

$$\begin{array}{lcl} \text{Lens.} & & \text{Pinhole.} \\ \left.\begin{array}{l} .328 \text{ in. diameter} \\ 1 \text{ second exposure} \end{array}\right\} & = & \left\{\begin{array}{l} .01772 \text{ in. diameter} \\ 60 \text{ sec. exposure} \end{array}\right. \end{array}$$

or $\sqrt{.01772^2 \times 60} = 0.137$ inch, diameter of pinhole at equivalent exposure of one second; therefore:

Lens .328 inch diameter = pinhole 0.137 inch diameter,

or in the ratio of $\left(\frac{328}{137}\right)^2 = 5.72$, or the lens area is over five times the pinhole area at equivalent exposure. Allowing a diffraction factor of most generous proportion the analysis would still indicate an absorption factor of considerably over 50 per cent. in the lens, which would hardly seem compatible with modern lens performance.

Now let us take the "Watkins" factors as published in the Watkins *Manual*. A table differing materially from that given by Dr. Power is given, with a rule governing its use similar to the rule given by Dr. Power:

TABLE 2

Watkins Power No.	Diameter in inches.
3	0.053
4	0.040
5	0.032
6	0.027
7	0.023
8	0.020
10	0.016
12	0.013

To compare by analysis with the factors given by Dr. Power it is necessary to reduce to an equivalent basis. By applying Formula 1 we find that K, according to the Watkins factors, would be 10, and by reversing the formula and adopting the Watkins factor for K we have

$$\frac{1}{\dfrac{32}{11} \times \dfrac{60}{10}} = 0.0573$$

or the diameter of a pinhole rated at $f/32$ at 11-inch focal length, according to Watkins, would be 0.0573 inch.

Expressing the comparison with the lens used by Dr. Power in an equation we have:

$$\begin{array}{lcl} \text{Lens.} & & \text{Pinhole.} \\ \left.\begin{array}{l} .328 \text{ in. diameter} \\ 1 \text{ sec. exposure} \end{array}\right\} & = & \left\{\begin{array}{l} .0573 \text{ in. diameter} \\ 60 \text{ sec. exposure} \end{array}\right. \end{array}$$

or $\sqrt{0.0573^2 \times 60} = 0.443$, diameter of pinhole at one second exposure, then lens 0.328 inch diameter = pinhole 0.443 inch, or in the ratio of $\left(\frac{.328}{.443}\right)^2 = .55$, or the lens area is slightly over one-half the area of the pinhole at equivalent exposure. It is contended that no known phenomena or factors incident to lens and small aperture performance would justify this relation.

We have found that Dr. Powers rates his pinholes as of one-fifth the area of a lens at equivalent exposure time and that the Watkins rating is twice the area of the lens. Reducing this discrepancy to exact figures for comparison, we have, $\frac{5.72}{.55} = 10.4$, or a Watkins pinhole would be ten times the area of a pinhole according to Dr. Power, at the same focal length and exposure time. As light admitted is proportional to the area of the aperture, it follows that a negative exposed according to Watkins would get ten times the exposure of one exposed according to Dr. Power; yet exposure in either case would produce a printable negative, a decided tribute to the latitude of modern plates and films.

Apropos of the remarks in the introductory paragraphs, as an illustration of the manner in which inaccurate data is read and passed on, a writer in the *American Annual of Photography* for 1920 quotes Dr. Power and repeats the assertion that an aperture 0.75 mm. in diameter will pass half the light admitted by an aperture 1 mm. in diameter. While the actual difference between the true and stated values could not be determined by the blindfolded photometer method, yet it represents a retarding factor in the development of the art toward that point where it will become an exact science.

While it may seem to complicate matters further to add additional factors to the variety now available for determining pinhole exposure time, if we should stop at this point, without adding constructive data, the reader would doubtless be in the same frame of mind as the author at the beginning of his investigations—ready either to drop the subject as too indefinite to ensure satisfactory results, or determine by analysis and experiment the proper method of procedure.

At the outset a definite mathematical relation between the pinhole and the lens was sought. To elaborate on the various intermediate steps in the calculations would be of little value, as they involved, largely, known physical facts; it being sufficient to assign a value to K, in Formula 1, to make it adaptable to all pinholes. This value, neglecting a vulgar fraction, is 6—Formula 1 becoming:

$$\frac{\frac{1}{d \times 6}}{60} \times L = f \text{ value at 60 times equivalent lens exposure.}$$

or to simplify for convenience,

$$\frac{1 \times L}{d \times 10} = f \text{ value}$$

In the absence of access to a complete physical laboratory, this value was confirmed experimentally under conditions obtaining in practice by securing a case of plates of one emulsion, using a reducing agent obtained in one quantity, developing all negatives at uniform time and temperature and preserving all other factors uniform except the varying exposures. That this method of confirming calculations is likewise subject to criticism, as being in the "blindfolded photometer" class is admitted, yet as the factor given represents a mathematical relation between the lens and pinhole (ratio of 10:11), taking into consideration the loss of effective light due to diffraction and diffusion in the pinhole and factors modified by reflection, refraction, ratio of actual to effective aperture, and various other phenomena peculiar to lenses; it is submitted as a standard of performance, capable, when properly applied, of producing negatives closely approaching, if not actually at, the center of the flat portion of the curve of density. It must be remembered, however, that as this rating does represent a definite relation between the lens and pinhole, the same allowances for distance and photographic character of the subject must be made exactly as though a lens were employed.

For convenience in the field, after the exact diameter of pinholes have been determined, it will be apparent from the formula that a constant (f value at unit focal length), or what the authors quoted herein term the hole number, may be obtained by the portion of Formula 1, $\frac{1}{d \times 10}$, it then being necessary to simply multiply the focal length in each case by this constant to obtain the f value. If hole diameters are determined in millimeters it is easier to reduce to inches by dividing the value in millimeters by 25.4 to obtain the diameter in inches and apply the formula as given rather than to try to remember two values for the factor K in the formula. Should negatives indicate underexposure or undue diffusion, examine the pinhole under a powerful microscope; the appearance will doubtless be quite surprising.

For readers provided with the "Watkins Pinhole Lens," sold in this country by Burke & James, the following corrections are offered:

TABLE 3

W. P. No.	Diameter. in inches.	Corrected (M) No.
3	0.053	1.9–2 for convenience
6	0.027	3.7–4 " "
8	0.020	5.0–5 " "
10	0.016	6.2–6 " "
12	0.013	7.7–8 " "

In this country, where the production of photographic supplies is largely controlled by one interest, the representatives of which advise that "It is impractical to give the relative speeds of plates," it would seem that the old adage, "Where ignorance is bliss 'tis folly to be wise," is largely capitalized. Yet if a second comparison with another industry may be permitted, the liberal education of the public in the use and possibilities of electricity has resulted in extending its use quite materially, even to the home to wash and iron clothes, wash dishes, clean rugs and carpets, cook food, regulate the furnace, curl milady's hair, heat rooms, light cigars and do a host of other things too numerous to mention, with a consequent broadening of the field for sales, for the manufacturers who provided the education.

It is suggested, in conclusion, that an independent physical testing laboratory for examinations, ratings and general photographic research work, preferably operated under the auspices of some prominent photographic society, would result in greater strides in an art that is not keeping pace with its fellows, due very largely to lack of dissemination of accurate knowledge.

PRACTICAL ADVERTISING

A STRAIGHT TALK

FELLOW-PHOTOGRAPHER, do you want more business? Want to be more than a plodder? Want to get out of a rut? Want a good, thriving trade that will require your spare energy and extra help to handle? Then do some sensible advertising through your newspapers. Printer's ink is the power that moves all business these days of keen competition, and photography as a money-making business will get a new lease of life if treated with printer's ink in liberal doses!

Newspaper advertising for photographers is a deplorably neglected field. First, because the majority of photographers are brought up to believe they must never stoop to common, commercial advertising to push trade. Second, because ninety-nine out of a hundred can't write the right kind of ads that bring business. Something fancy, fussy or feverish is generally the product of their pains. Not that their efforts are not sincere; but it takes study, training and ability along this peculiar line to write successful, business-bringing ads.

A little jolly froth dashed off won't do. Sounds smart to the office, perhaps, but lacks the seasoning of solid sense—the pulling power to any ad.

Don't think that, because old liners and timers have always cried, "Don't use printer's ink," it is contrary to art and lowers the tone of the profession." Nonsense! Boys, wake up! There is a raft of business all around you, and it can be brought your way with proper advertising.

For years stockdealers have proclaimed from the house-top, "You must get such and such a camera; so-and-so's lens; this and that background, etc., if you would do business." All good advice, as far as it goes. Certainly, get the best tools to be had. Make good work, learn how or hire some one who can, and then—advertise!

It is estimated by expert authority that twice the trade in photography can be secured by proper newspaper and booklet advertising.

Why not? Is photography so radically different from other business that it needs no publicity?

Don't you know that even churches are driving in volumes of business with bright, newsy ads, changed often, which a short time ago was considered a sacrilege to their profession.

Now, it is granted that you are up to date in equipment; that you have fresh attractive prints; that your cases are

BY MATTIE EDWARDS HEWITT NEW YORK CITY

changed often and your help competent and courteous. From such you are sure to attract a certain share of trade. But mark how many more pictures will be made and shown, your name on every tongue and your studio a household word, if you advertise!

Do you suppose for a moment the respectable dry goods concerns, hardware men, druggists, etc., sit still and depend just on the customers that drift in, simply attracted by a pretty window display and occasional praise from their customers? Not any! They are moving every faculty to develop fresh, newsy advertising. They know their business thoroughly. Know they won't have much business—a mere existence—if they don't spread printer's ink!

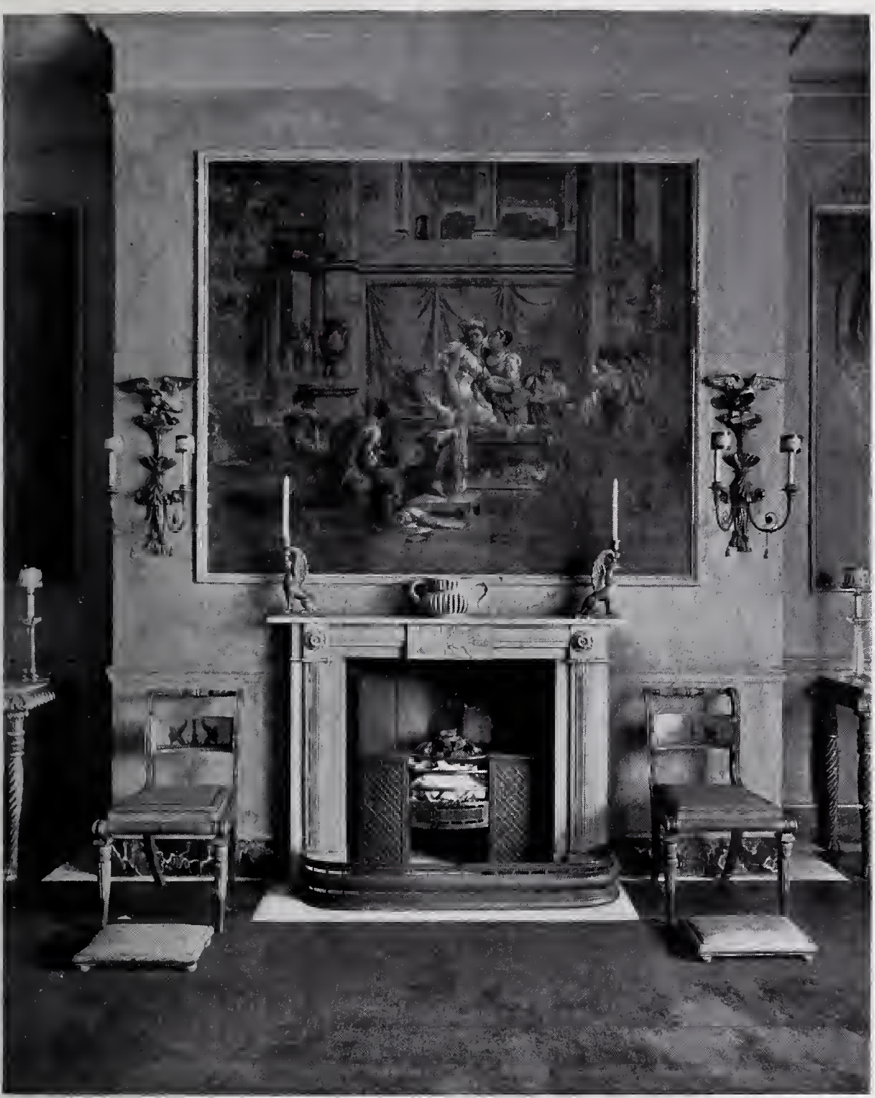
Everyone knows that the success of the big department stores and hundreds of others is due to advertising. Now, is photography so utterly removed from all other vocations as not to need the potency of publicity? Emphatically, No! Why, even churches advertise.

Haven't you observed how human nature, especially in this country, wants to be told all about an article before purchasing? The world wants to be told over and over, again and again, but in some new way, the merits of methods and merchandise. Photographs are merchandise made to order; that's all.

The idea of getting all you can, of the best you can, for the least money you can, is indelibly stamped on our minds—superior quality attracting some, low prices others.

Talk quality first, price next. Make the best photographs in your town, then talk about them in your advertising.

Has it occurred to you how the constantly changing styles in mounts is a powerful lever to move more trade? Of course, you buy liberally of new goods as fast as they are shown. But goods won't sell themselves unless helped by honest, straightforward sound sense and persuasive talk in advertising. And inasmuch as it is neither dignified nor policy to have a barker or sandwich man parading before your door, the best and most dignified medium is the newspaper. Women are the buyers and the readers of ads. Rest assured if you have any-



By MATTIE EDWARDS HEWITT
NEW YORK CITY

thing to say in the newspapers, women are going to know it.

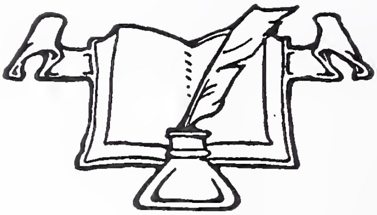
The old way to introduce a new style is to fill the cases (not even a card announcing the name or price) and wait several weeks before the community "gets on" to them through some one's private praise.

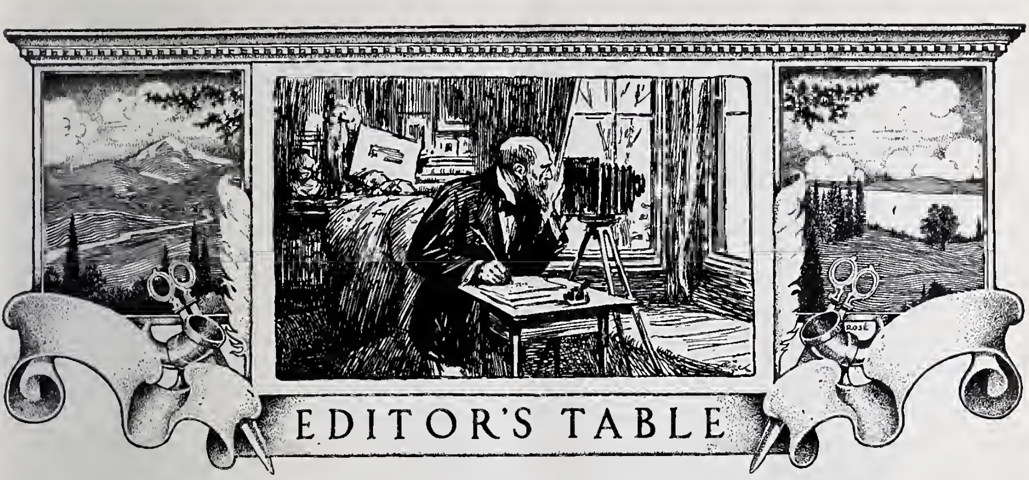
The new way—business-bringing way, money-making way—is to tell it to the town through the newspapers. Such announcement coupled with cases filled with attractive prints never fails to bring results.

Everyone is in the photograph business to make money, and any one who says contrary is much mistaken. When under the skylight we are after the dollars, all we can get of them in a legitimate, business-like way. You might sit and gloat over a handful of medals, and still starve or have a spasmodic, mediocre trade! Skirmishing around the back edge of the field, spitting on your hands, getting a "good ready" for opportunity, if it should swoop down upon you, is eating up your rents, courage and credit. Wise ones will clap on their spurs now and ride to the front! Good work and good advertising are sure winners. And the studios that will make money in the near future are those that turn out good work in a short time, medium priced, and advertise the fact.

But you say, "I haven't the time to write my ads, and when I do they don't read right, and nothing comes of them." That's the point to discuss right now. If you haven't the time or skill, procure the services of some one who has. There are plenty of excellent ad writers whose skill put into your business will give it life and prosperity. Be sure, however, you select some one who is in sympathy with photography, else his logic is dry and lacks the right ring that catches the customers.

Lastly, remember that all the advertising in the world won't hold trade and bring more unless the conduct of the salesman and the goods bear out the announcement. For if there's a place on earth where an Annanias comes to grief the quickest it is in a photograph advertisement.





EDITOR'S TABLE

GETTING YOUR PRICE.

TO be really strong in maintaining fair prices you must be content to start in a small way, make a reputation for good work, always uniform, and turned out with promptitude. Deal only with good business firms who pay up promptly, and give them business-like terms. Don't be too craving for business unless it is good business. Advertise by every possible means that you do good work, and in the end business will come to you instead of you having to go after it. You can then demand your own prices, and you will get them if they are fair. The good business man—the successful business man—is never a cut-price man. You may point out instances where the contrary seems to be the case, as in some big retail stores which appear to have been built up upon the principle of small profits and quick returns, but if you are able to penetrate deeper into their methods you will see that the secret of their success has been good system. They have ascertained the minimum profit at which business can be conducted, and how much they can save by good management and cash transactions, so that in this way they get the pull over competitors who never know just how they stand. The moral then is obvious: that you must shape your business methods so that waste and loss are reduced to a minimum, and thus turn out at a fair price better work than your neighbor and *with greater punctuality*. And remember first, last, and always that the photographer must study and practice business methods just as much as he practices the technic of his profession. Yes, even more, for the average photographer has often a predisposition toward photography and has often a positive aversion to business.

Business elements should not absorb or swamp the artistic sensibilities, but must be present as the motive power under which, if properly directed, the artistic qualities of the studio are to be made to improve and grow in value year by year. We are never to surrender our artistic ideals, but always do the kind of business that will bring money returns.

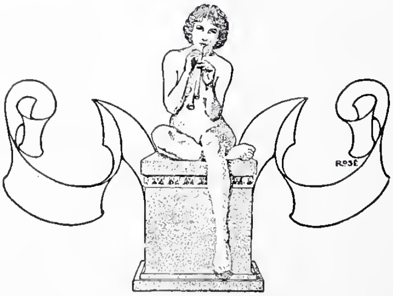
THE TRUE VALUE OF CONVENTIONS

IT seems hardly necessary, at this day and time, that anyone should be called upon to show the value of conventions in any walk of life, but more especially in ours, which combines so much of the artistic with so much of the business phase. The great idea of the times is centralization; we find it in business, in the immense trusts and combines, which are nothing more or less than perfected conventions of the highest type; we find it in the social world, where the classes naturally adapt themselves along the lines of their personal likes and dislikes; and we find it in the politics of the world; and in labor circles as well.

A convention, which, in its primary meaning, is a coming together, is a part of civilization, a part of progress, and an important part. Every being who has the power of conveying feeling by sound feels the need of associations, and associations are conventions of the simpler type. Men cannot meet without exchanging experiences, and all talk is but the exchange of their experiences, either real or imagined. The wisdom from books is not the practical wisdom of the world; it is the wisdom from experience that makes successful men—men who profit by the mistakes as well as the work and success of others. This, then, is the first object of a convention, and in this object there is the meat of what is sought after. "In much deliberation there is much wisdom," says some old proverb-maker, and he puts in a nutshell the value of conventions. In every word spoken there is a hint, in every experience detailed a suggestion for the future, and, if we can but grasp these potent facts, we must acknowledge that we have received good from the convention, and the amount of good received is dependent largely on each one present.

Men who travel along the beaten track—who get into a rut, as it is called—never improve or advance; they crystallize, so to speak, and each year of this crystallization hardens the crust and makes the man less open to the suggestions that would aid him, and, it may be, start him on the road to success. It is not given to any one man to know it all; but in these comings together, these conventions, we get in a short time what some others may have spent years to obtain.

There is no loss of time to the man who will properly appreciate the value of such a meeting. A simple formula will serve to make all of us get the greatest good out of the big coming convention; and we would state it in this wise: Mix a little application with a vast deal of comprehensive listening, and to it add willingness to learn. When this is at the right condition flavor with a determination to profit by what we hear and see, and then we will find the convention a most delectable dish, and one that will not only increase our appetite for conventions, but also our capabilities for appreciating the value and profiting thereby.



PRACTICAL PAPERS ON STUDIO WORK AND METHODS

The Tone of the Studio

It is recognized by most manufacturers that it is a bad policy to attempt to run two grades of quality under the same firm-name or even in the same works. Rolls Royce and Ford are both well-known names, but the quality of their products differs widely, although both are satisfactory to their respective clients. If, however, the Rolls Royce firm were to attempt to compete in price with Ford, one of two questions would inevitably arise. One would be: Is the price for the luxurious car too high? and the other: Why not buy the cheap car if it has such a good name behind it? Precisely the same situation is created when a photographer capable of doing good work endeavors to increase his output by running postcards and other cheap lines. The result usually is that patrons will choose the lower-priced styles if they are sufficiently good, so that in the end, although the volume of business is increased, the profits are actually diminished.

Anyone starting as a photographer should come to a decision at the outset as to the style of work by which he will stand or fall. If he elects to do high-class portraiture he must arrange accordingly. Prices need not be high but should be remunerative, and any temptation to drop below the standard originally fixed should be resisted. This gives a distinctive tone to the business such as is enjoyed by many of the "select" dressmakers, milliners and tailors in our large towns. When such a course is adopted it is possible to get better prices when introducing new styles, but if there are any cheaper lines shown it is difficult to do so. We have known several photographers who have tried the experiment. One had two departments in the same building. Those customers who wished to be taken by the principal were charged a higher rate than those who were content with the work of an assistant. This man did a large business, but died insolvent. Another well-known man ran two studios of different status, the second under an assumed name, the work of both being finished by the same staff. This resulted in a pressure of work that interfered with the careful methods by which he had made his reputation, and after a short time the second studio was disposed of to someone who could devote all his energies to it.

It is perhaps hardly necessary to suggest that the class of business aimed at should be well within the capabilities of the individual photographer, but we have known cases where the quality of the work done could hardly be called mediocre, yet comparison with the work of really good artists has been invited. In such circumstances disappointment must ensue, and this can hardly be wondered at. This is, however, not the usual thing: many clever workers are modest and apt to put too low a value upon their productions.

When it is decided to attract a good class of customer considerably more must be spent in furnishing and decorating the premises than for a cheaper class of business. Such outlay is not extravagance, but a good investment, being, in fact, a form of advertisement which costs little after the first plunge. As regards materials, the best quality only of printing papers and mounts should be used, and platinum or carbon offered with their guarantee of permanence. Stationery should be of the best quality and of artistic design, avoiding elaborate display, "costly as thy purse can buy, yet not expressed in fancy," for a good impression produced by a reply to an enquiry goes far in securing an order.

Especial care should be devoted to the show case or window, and nothing should be displayed which the proprietor is not perfectly satisfied with. It is a good plan if the ordinary run of sitters is rather commonplace-looking occasionally to engage a professional model for the purpose of making specimen pictures. In the majority of cases it will be a good investment to do so, as such negatives are the photographer's copyright and should bring in money for advertising and other purposes.

It must not be supposed that these remarks apply only to studios of the highest class. Even in a small town a photographer may give his studio a distinctive note, and care must be taken to do nothing which is not in harmony with it. We have seen a very good portrait show quite spoiled by the introduction of a roughly mounted set of postcards of some local happening. The greatest care should be taken to preserve a distinctive character in enlargements and colored work, so that comparison between them and those offered by other studios cannot readily be made on a cash basis. Lastly, but of great importance, those who would raise not only the tone of their own studios but of photography generally must do all in their power to attain for it the status of a profession and not merely a trade in which profit and not quality is the only desideratum.—*B. J.*

Sunlight

How often do we see a really successful sunlight picture, something which really gives the impression of warmth, of atmosphere and bright light? Why is it that so many of these pictures fall far short of what we saw and what we thought we were going to get? The reasons of failure are various, and I am going to try to point out some of them; but where to begin!

Plate, lens, exposure, development, subject. To begin with the latter, if we stand out in the bright sunlight with our backs to the sun the landscape will have a certain amount of flatness, with patches of shadow on the ground. In this position we get maximum of light and minimum of shadow, and as we turn to the right or to the left the shadows begin to show on the sides of the trees and objects more and more strongly and in greater proportion till we are facing the sun, when we obtain the maximum of shadow and minimum of light. The sky equally will have changed from a deep blue in the former to a grayer shade in the latter case.

For the sake of example, let us select a suitable subject, with the sunlight coming from, say, the half-right. This will give a fairly large shadow surface and small lighted surface. The difficulty which presents itself is how to get detail in the shadow without blocking up the high-light and how to retain "atmosphere" or aërial perspective. If you are equipped with a good anastigmat working at *f*/4.5, just open it out as wide as it will go and try to focus your picture. The depth of focus will be small, but compensate as best you can, and then take a look at your picture. It will be full of light and atmosphere, and perhaps too soft and fuzzy in the foreground and in the distance. Now close down the stop to *f*/32 and see the difference. Sharpness will be there all right, but atmosphere will have vanished; the picture you see will be hard and flat. Your shadows will have lost their beauty, so you find you must open the stop again. Do this slowly. Get it as far open as you possibly can consistent with a "sufficient" depth of focus, which with careful compensation you may get at *f*/6.8, or even a larger aperture. Anyway, see that the picture on the ground-glass looks as sunny as you want it to be.

Before going into the question of exposure a word about plates will be useful to some. The picture we have just focussed on the screen is in color, and we are going to render this in monochrome, and we want to get a faithful rendering and retain all the values. For instance, the sky is blue, with white clouds, and we wish to retain the relation of tone between the two. Those yellow flowers in the foreground are of light tone; we do not want them represented as black, nor do we want the light green grass rendered as a dark tone. Therefore we must use panchromatic plates with a properly corrected yellow screen. An "ordinary" plate cannot render these things correctly.

As regards exposure, a meter is useful, and the test should be made in the shadow, since we want to obtain details in the shadow, and we must allow, of course, for the multiplying factor of the yellow screen. Make your exposure for the shadow, because you cannot develop out any detail which is not there. If this is your first experience of this kind, better take three negatives, giving them all the same exposure.

As you are using panchromatic plates, which are also red-sensitive, it is as well to do the development entirely in the dark and use the usual time methods. It requires some experience, but the makers usually give full instructions.

A good negative should be able to give a range from white in the high-lights to black in the deepest shadow. In the present instance, our high-lights will be overexposed, therefore we must be extra careful not to overdevelop them. If we develop for the normal time, the high-lights will probably be too dense; they surely will be if development is carried further. This you can test with your three negatives, and they will serve as a guide for future work.

Supposing the time for a given developer is five minutes, develop No. 1 plate four minutes, No. 2 five minutes, and No. 3 six minutes, or, if you prefer it, reserve No. 3 and develop it according to the results obtained with the other two.

If the plates are not all developed in the same dish at the same time, fresh developer should be used for each, as a developer which has been used already does not give the same result in the same time as the fresh one. If these instructions are carefully followed a good printing negative, with plenty of detail in the shadows, and with good gradation, should result, and sunshine will be there.

The points to remember are:

Large aperture.
Expose for the shadows.
Develop for high-lights.—*B. J.*

Hints to Commercial Photographers

Although the following hints are nothing fresh to the old hand, they may be appreciated by the beginner in this particular line. Leather goods, such as hand-bags, etc., are not very difficult; the chief aim should be to show the texture and marking of the hide. Work in a dull light and give full exposure, using screens and orthochromatic plates and a weak developer.

Shop fronts are not easy subjects, and should be studied well before photographing. The great trouble is reflections of opposite buildings and the passing traffic. The best time to photograph is the very early morning, and often by using a small stop and a slow plate, and then by giving a long exposure, the people passing will have no effect on the plate.

Stained glass and memorial windows should be taken on a dull day, as the trouble here is halation. At times it is necessary to erect a temporary platform, or work from a step-ladder. Where this is not available, the swing back must be used. Don't develop for a harsh negative, but for soft detail. Machinery should never be taken out of doors, as the strong top light causes deep shadows. A machine should not be photographed directly in front, as it will have a very flat appearance. All bright parts should be daubed over with soft putty. If parts underneath are wanted to be shown, or those in the shadows, they should be painted with a "flat" drab paint (a paint without gloss). Letters and figures which want showing should be painted with white. Sometimes machine shops are very badly lighted, which means a long exposure. Photograph when all the machinery is stopped, or the vibration may upset your camera in some way or other.

Furniture should show the markings of the wood, which is difficult when the surface is polished and finished. Where possible it is better to photograph before they are polished, and this of course obviates the reflection difficulties. Furniture is best photographed in a room where the ceiling, floor and walls are a light color—white, for preference, with a good light behind the camera. Illumination can be softened by placing tissue paper over the windows; also screens should be available to cut off any undesired light. The size of the image is very important, but the firm will supply particulars as to what is required.

In commercial photography the field is so large that it is possible to mention only a few subjects. Panchromatic plates must be used when photographing subjects with many colors, such as carpets, paintings, etc. Screens are absolutely indispensable to the commercial worker. Plates of medium speed are best, and should always be backed. For general work the camera should be a strong pattern, with all the usual movements. The tripod should be of stiff and solid pattern. The people who want photographs for advertising and other commercial uses only want the very best, so set your mind on giving the best every time and success will be yours.—*B. J.*

The Outside Jobs

In all large towns, and also in many small ones, there is a considerable amount of work to be undertaken for collectors, estate agents, breeders, fanciers, etc. But, in order to do really successful and satisfactory work, the photographer must first make himself acquainted with the rudiments of the subjects with which he is dealing.

In this connection I would like to point out what may seem a rank contradiction: That often the most successful work is the most unsatisfactory from the photographer's point of view. I mean it in this way. The photographer—especially the successful high-class one—usually prides himself on the artistic excellence of his work. But often when such work is needed for a trade purpose, technical accuracy may be of far more account.

I once had the handling of a number of glorious pieces of old china—Wedgewood, Pallisy, Sèvres, and others—things to delight any artistic soul, but, alas! the owner set far more store on the clearness with which the makers' signs, trade marks, names, etc., could be reproduced, in order to prove their origin. They were for sale, of course, and the owner paid well for excellent technical prints.

If you ever have to photograph a violin for catalogue or sale purposes, lay the fact to heart that it is a good photograph of the outline, *f* holes and arching that is wanted, and struggle not for artistic effects. The master-craftsman who made it is already supposed to have put in the artistic workmanship. Any handbook will furnish a good list of the points to be looked for in its construction, and this will serve as a guide in working for any local music dealer, or owner of valuable instruments.

Take breeders again, whether of horses, dogs, cats, cattle, poultry or any live stock. If these are for sale or exhibition, they are judged by certain merits evident in their form and breed, and "points," or marks, are awarded for their possession in any marked degree. Combs, tail-feathers, legs, ear, back, evenness of markings, width of shoulder, smallness of muzzle, all these things count. Before going off for a long day's work on farm or stables, turn up the articles bearing on them in any good encyclopedia or other work of reference. If the memory be inclined to play tricks, jot down the points of most importance in a note-book, and look it over before starting out on the job. This will serve a threefold purpose. It will save wasted plates, expended on perhaps more artistic but yet useless points of view. It will ensure more respectful treatment from grooms, stablemen, cowmen, and others, who will respect the photographer and treat him with courtesy in proportion to the knowledge he displays. It will ensure more satisfactory results being sent to the customer, prints that more definitely fulfil his desires, and will often save a second journey and doing the work all over again.

There is a great deal of work to be raked in from breeders and fanciers, and they pay well for the sort of work that suits them, just because it pays them to pay well for photographs that sell their stock. In this connection many photographers might well study the advertisement pages and the photographs reproduced therein in *Country Life*, *Vogue*, *Vanity Fair* and all and any of the big weeklies, as these columns are the recognized mart of all kinds of valuable goods, animals, property and articles of vertu, and a photographer who will take the trouble to do a little specializing in this kind of work, over and above his ordinary studio portraiture, will soon acquire a reputation in his district.

Keep a good-sized index-book, and at your leisure write down the chief points of all such things as china, silver, old furniture, musical instruments, cattle, horses, dogs, pictures, and so on, as you come across them, and it will be most helpful to you. Then also keep a good-sized album on the reception-room table, with the best representative specimens of all such work you have done, so that any and every stray client may be put in mind of it, and many casual orders—profitable ones, too—will come your way, from proud owners of old silver, sideboards, and so on. When photographing silver be careful of the crests, monograms, etc.; often the retoucher can help this out, very carefully, with a sharp darning needle stuck into a wooden holder to clear up blurred lines, and a little soft lead work to give good crisp touches of high-light. Remember, it is the graceful outline that is valued, so that often a dark background serves the purpose best. I might here mention that an ordinary steam kettle kept on the boil often makes it easier to photograph silver, the steaming dulling it sufficiently to make it photograph crisply. Only take care now and then, if the job is a long one, gently to clear the lens with a soft chamois leather. This also is sometimes a useful dodge where there is a good deal of bright machinery, which, under the steam, soon dulls down.

When photographing old furniture, etc., at the owner's home, and in dark corners, a little magnesium ribbon is sometimes most useful to even up the lighting if waved about, and is far safer, less messy, and better than flash powder for dark interiors.

Now, as to working for house agents—a class of work of daily occurrence in many districts. Let me advise you to take somewhat distant views, and then enlarge them. The effect is often infinitely better, and does lend what the agents call a "dignity" to an otherwise unprepossessing building. If not, keep as close to the gateway as possible, make your carriage-way look as sweeping as you can, and avoid showing odd bits of stable and garage yards. Sometimes agents greatly fancy corner views, showing bits of at least two sides, and always if possible include any trees or large shrubs. A little compass and notebook are useful here, so that you can note which plates were exposed on the north, south, southeast front, and so on, and this information, lightly pencilled, is often much appreciated by agents, as it saves an unnecessary journey to verify these particulars. Just write the number of the slide in pencil on each negative before it goes into the developer, and there you have it. Such little details soon gain a name for a photographer with estate agents, who will in consequence leave him more free to follow his own devices in such work. But, above all, remember that these people are all out to make money as well as the photographer; they care less about art than they do about securing prints thoroughly businesslike from their point of view, and this is the reason that so many pushful amateurs have secured this class of work, ousted the professional, and gradually developed themselves into the cheaper class of photographer.

Allotment holders and florists, too, are a likely field; it is easy to arrange a few samples of peas, beans, potatoes, etc., as in a flower show, for specimen purposes, and then watch for the shows and put a timely note in the window or local newspaper, or both. Very many such odd jobs go a-begging to amateur friends which the photographer might have if he displayed a little energy. Only, such prints must be good prints to catch the eye, outstanding and good, if possible, in every way.

Also it is a pity that more photographers are not better acquainted with the properties and working of color plates. These will be coming again into the market shortly, and in ever-increasing quantities. Once the technical details are mastered there ought to be a good opening among florists, seedsmen, keen gardeners, and others for color plates, which by the duplicating methods now in use can be as well turned out in number as the recognized every-day print. At least it offers a new and wide field for work and enterprise, and one which astute house agents may be trusted not to neglect. At any rate, all these matters are worth attention: if not given by professionals, the amateur will step in ahead of us.—G. E. H. G. in *B. J.*

An Outline of a Workable System

"A PLACE for never-a-thing and never-a-thing in its place," would be a more applicable rendering of an old-time proverb in the case of some studios I have visited.

There may appear much liberty about such a free-and-easy style, but the time is bound to come when it is dearly paid for by perhaps an hour's search for a single article, with all its attendant irritation. On the other hand, what compensation will result from a little self-imposed discipline in the pleasure of finding things just ready to hand when wanted?

Many and various have been the systems put forth. The writer, however, has adhered to none in particular, but as hitches have occurred (and they will) the point has been considered and a plan arrived at whereby the same hitch would not occur again, and, if workable, it has been included into the daily routine.

To begin, then, the system greets the sitter from the very outset, though behind the smiling face of the receptional. All names, as well as addresses, together with the order, are systematically entered and numbered in the book kept for that purpose. It might be observed such a thing is too obvious to mention, yet the case of a money-making photographer comes before the mind who never kept books at all, and therefore never took even the sitter's name. The number of copies required and amount paid was just pencilled on the plate in the dark-room, and the photographs themselves served to distinguish between one order and another.

A good look at the photograph was followed by a scrutinizing glance at the caller in order to ascertain if the features were identical. But alas! for the chaos that resulted from such lack of system.

Proofs, then, are promised by a given date. Exposed plates are put into boxes, labelled for every day in the week on which they are taken.

When busy it is not always found practicable to develop the day's takings the same evening. It is convenient therefore to be able to put your hand on Monday's or Tuesday's and develop and proof according to promise.

The number, order and date promised is transferred from the book to the negative, the proof now returned confirming these details.

The negatives, when retouched, are placed just where the printer will look for them, under a label showing what process and if contact or for enlarging.

A large paper bag is kept for prints requiring to be toned, labelled "Sepia."

The prints are pressed every morning and entered roughly in a printing book, showing the number of prints done and any over or spoilt.

A dispatch book is handy for reference in the case of callers or delay in post.

Another very important item is to have a nest of pigeon-holes alphabetically arranged, similar to what is seen at the post office, where all photographs "to be called for" are placed. Finally, when putting a thing out of hand put it just where it will be looked for when wanted. The observance of this rule will save time, temper and talk. —*B. J.*

The Inherent Design

A COMMON notion of composition in portraiture is that the artist pulls the sitter about as a painter might adjust a lay figure and then spreads or bunches drapery, places books, flowers, or other accessories just exactly where they will look nice, and then, lo! the picture is composed.

I should like to get the beginner to see that although such ideas may be at the back of the artist's brain, there is no practical necessity for so much arduous physical labor. The artist must not set his picture as a draper sets out his window. His part is to adopt the wait and see method.

The sitter arrives and the photographer immediately begins to think—to see the finished print. The sitter is introduced to the spot where operations take place. He, or she, is consulted as to style of thing, if that has not already been the topic of a previous consultation, and the sitter poses. (See that the pose is natural, otherwise failure will be hard to avoid.)

There, befor him, is the photographer's material for a composition. What does it present? Is there a fine shape in the whole arrangement? Are there the makings of a fine shape, that might easily be completed and strengthened by some accessory or some background feature? These are matters the photographer must learn to decide upon in a flash—and they are settled in a flash when practice has made the problem familiar. Should there be nothing promising; should the figure be lumpy, presenting no grace in its shape, then another pose must be tried.

The final result, bounded by the four edges of the print, must always be kept in the mind's eye, and the ruled or masked focussing screen will help toward this.

The reader may here interpolate, "That's all very fine, but I don't know what to picture in my mind's eye." Very well That is the occasion for a little art-philosophy, and the justification of these articles.

Things are either pleasant or unpleasant in arrangement. When they are unpleasant, it is usually when they are haphazard, unrelated, chaotic. But when they are related to each other when they suggest growth, order, progress, balance, then they become interesting. A plant with its stem, leaves, and blossoms is a beautiful thing, because all its parts are related to each other in its system of growth. But pull it to pieces, and throw together the leaves, the stem, the leaf stalks, the flower stalks, and the petals, and you get nothing but a meaningless collection. A portrait or a picture, the parts of which are not related, is just as meaningless.

There is a simple idea in the shape of the plant growing naturally. It perhaps has one leading line in it, even though it may be bushy to make a single design. At first he would be tempted to make a symmetrical design, as a child might; but that would not be pictorial; that could be what is called decorative. We cannot arrange our sitters in a formal and symmetrical manner in the ordinary way; although it has been done for special purposes. The bones and box-lids and claws and matches must be welded into one shape. Moreover the shape itself must have that grace, spring and singleness of idea which the natural objects themselves possess.

When once this idea of organic beauty is grasped, it becomes quite easy to put everything together to form a design having one ruling organic motive or idea. The figure supplies an organic shape; everything about it or near it must either be part of the shape or be so disposed in connection with it as to enhance the complete design by continuing it, by repeating it, or by contrasting with its chief lines. In this way homogeneity will be assured; simplicity will come of the single idea, and precedence will not suffer by competition of accessories.—F. C. TILNEY, in *Professional Photographer.*

VIEWS AND REVIEWS

Keeping up Interest

After two or three years of business activity and prosperity, there has appeared a lack of interest and pep in the business. This is perfectly natural, for nearly every one has worked hard and has had business offered without any effort to get it. It is also probable that the increased business has left a surplus of profits that has dulled the edge of thrift and energy, and there is not the driving force of necessity behind us that compels us to maintain the customary aggressiveness.

In most of the countries of Europe this phenomenon is much more pronounced than in the United States, and it is causing real concern in France, England and Germany.

Little Belgium seems to be immune from the disease, as they were in dire poverty during the German occupation, and they would not and did not work hard for the conquerers of their little country. Having had a rough time, they are ready for good, hard work, and they need the money and have to hustle to get it. They are, therefore, going after business with the old-time energy and force.

How far the apathy will go in this country is a rather difficult question to answer. There is a very decided diversity of opinion, ranging from the optimistic class, who believe that it will be of short duration and that the natural energy of our people will keep them pushing at their business after a very short breathing spell, to the pessimists, who doubt that it is just a passing phase, but who believe that in order to prevent it growing to serious proportions it is necessary to stimulate the interest and energy of our business people, that they may not let decay get a firm foothold. They look to the organs in the various trades to point out the tendency and to combat it before it does any harm.

We decline to be pessimistic, but we feel that there are sensible and unanswerable arguments in favor of watching this apathy and not permitting it to make any headway in this country. We believe that to foresee it and to forestall it is to demonstrate the alertness of our business methods and customs. We believe that by recognizing the possibility of it we can prevent the probability of it.

The manufacturers of photographic materials have taken hold of the situation, and two of our leading firms have started a well-planned campaign to keep photography before the public and to stimulate the interest in pictures by photography. This is more than an advertising scheme; it is a big, generous, broad-minded view of a situation where organized action in a big way will be for the benefit of the users of photographic material. They hope and expect that the photographers will appreciate the situation and will see that the national advertising campaign will benefit the individual only if he will back it up by a display of energy on his own part.

The manufacturer profits only after and if the photographer profits. Such advertising as he may do to arouse the interest of the public in having photographs made will prove profitable only in case the local photographer coöperates by personal effort to convert this interest into actual business. The manufacturer shoulders one-half of the burden and is justified in believing that the photographer should and will shoulder the other half. But the big idea is that the photographer is presented with a great opportunity, and it is positive that a goodly percentage will take advantage of it, and we feel that it is our duty to encourage any activity that will induce a larger percentage to get in.

The mediums through which this campaign is carried to the public are the popular periodicals of the country that have the largest circulation among that class that can be counted upon as yielding the largest amount of response. The photographer who is interested has but to watch the pages of these magazines and get the cue as to when and how to time their efforts with the big effort. Properly timed team work will accomplish much more than random effort, and we urge upon our readers that they keep careful watch for these general publicity advertisements and make use of them for display purposes and as a basis for individual effort to convert the attention and desire that has been aroused into actual business.

The prosperity of the nation is based upon the prosperity of the individual, and a financially disorganized nation is caused by the financially embarrassed individual.

There have come to our ears whispers of photographers who are expressing themselves as regretting that they spent too freely of their profits during the period of active business during the war, and they go farther by confessing that they are beginning to feel the pinch of a reduced volume without a corresponding reduction of expense. If the pinch is sharp enough, all who failed to save should jump at this opportunity to boost trade, and it is devoutly to be hoped that the next time they enjoy a good business and make a little extra money they will profit by the past experience and save enough to prevent embarrassment when trade slackens.

With the present high price of living we have got to hump ourselves to make both ends meet, and it is coming to pass that it is not optional as to whether we will hustle; it is compulsory. There are, and we are afraid that there are too many for our good, radically minded gentry who favor the letting down of effort and the curtailing of production in order that a business depression may be produced that will give them an opportunity to fatten off of the public bounty.

This is designated in our day and generation as Bolshevistic propaganda. But it is a trick that is ages old and has been tried repeatedly in past generations under different names and different dress. The wise and thrifty leaders in our American business are not the ones who want to squeeze the masses. They want the country to continue prosperous. Their thrift and experience enables them to so fortify themselves that a business depression will not hurt them at all, but, on the contrary, will present opportunities that those who have saved and prepared can take profitable advantage of.

But they voluntarily take upon themselves the burden of helping business over its reconstruction period, because they prefer to make money side by side with all business men and workers, rather than make it at the expense of any one class. There are individuals who would make their money from the misfortunes of others, and such men are found in all walks of life. There are high finance artists who profit by such means, but they are easy-money seekers and are far removed from the American manufacturer who is working for general prosperity, for the very sound reason that he does his best business when every one else is busy.

If we all get busy we will all be happy, and the croakers of questionable reputation and sinister purpose will find slim pickings among the loyal, busy, satisfied American business men.—*Trade News.*

Death of George Hanmer Croughton

George Hanmer Croughton, a talented painter of portraits and miniatures, for several years in charge of the art exhibit of the Rochester Industrial Exposition, died Thursday night April 15, at his home, Rochester, N. Y., after a long illness. He leaves five daughters, the Misses Lottie H., Bessie H., Annie H., Mary G. and Amy H. Croughton, and one son, George Croughton, all of Rochester, also four sisters.

Mr. Croughton was born in London, England, April 14, 1843, and at an early age displayed a taste for drawing. At the age of sixteen, he entered the National School of Art, and later studied with Thomas Sidney Cooper, a member of the Royal Academy. Between the years 1862 and 1870, he made a tour through England and Scotland, painting and sketching and remained for some time at that work in Ireland. Returning to London in 1870, he was engaged by Southwell Brothers, photographers royal, and while with this firm painted several portraits of British notables, including one of Queen Victoria, by command. He also painted one of the late Napoleon III, the last one painted before the emperor's death. In 1872 Mr. Croughton was awarded a special, first-class medal by the Royal Cornwall Polytechnic Society for ivory miniatures. He later opened a studio of his own and obtained awards for exhibits at the International Exhibition at South Kensington, London, and at the Centennial Exhibition in Philadelphia in 1876. The success of his work at Philadelphia was influential in bringing him to this country to settle. He painted for a time in Philadelphia, New Orleans and Richmond before coming to make his home in Rochester. He was always an advocate of the more general use of photography in art and in 1865, when he became a member of the London Photographic Society, published several articles on this subject. He was known to photographers throughout the United States and has been a speaker and judge at several national conventions of the Photographers' Association of America, in which he was awarded an honorary life membership.

International Salon

The Fédération des Cercles Photographiques D'Anvers will hold an international salon of photography in August next, during the seventh Olympic festivals. Entry blanks may be obtained of the Honorary Secretary, Café Suisse, Place Verte, Antwerp, Belgium, and all American exhibitors are invited.

Southern School of Photography

The sixteenth annual term of the Southern School of Photography opened April 5, with the largest enrollment at the beginning of a term in the history of the school, and indications point to a continued increase.

An interesting program, consisting of music, songs, and addresses was give after which the students were organized in classes.

There were fourteen States represented, with a number from Canada.

Prices Still Go Up

It must stop sometime. It can not keep up indefinitely. There is good and sound reason for each advance, and the photographic trade has fared better than almost every other line, but it becomes embarrassing to record further advances each month.

Just as we went to press last issue we announced the advance in the list of all papers made by the Eastman Kodak Co. The new price list has been distributed through other channels, but any who have not received one of these lists will be supplied by application to any dealer.

Since plates and papers were advanced there has come the professional apparatus and Graflex and Cirkut cameras. Portrait cameras and all of the parts and accessories have advanced approximately 20 per cent., and the advance in Cirkuts and all of the apparatus and accessories pertaining to them and Graflex cameras is in about the same proportion. The lenses have not advanced.

We do not feel equal to giving particular reasons for these advances but are able only to treat them all in a very general way. So far as plates and papers are concerned we only wonder that they did not advance many months ago. . Perhaps the change at this time is a little more disconcerting by reason of the fact that we were not prepared for it, or rather that our expectations were a thing of the past and we were lulled into a feeling of security because they had not advanced at the time we had expected them to. The causes developed with the scarcity of glass and paper stock more than a year ago, and it was deferred by the careful management of the manufacturers who anticipated their requirements so generously that they were able to sell at former prices long after the advance in raw materials had occurred.

Manufactured goods are high because they are high. There we enter the vicious circle that is expanding without apparently being able to expand to the breaking point and we can apply to this situation only the facts that are part and parcel of the dire results of the great war. There are those, we regret to say it, who did not interest themselves in the war, because they believed that it was an incident far away from this country and affected directly other peoples and other countries, but affected us only very indirectly. They were not interested in the line of trenches in France, but they are now beginning to exercise an interest in the aftermath because it reaches down into the pockets of each community and each individual.

We see an effort, too, to find a goat and to place the blame on some individual or individuals. The ones who were least concerned in the details of the war are now most stridently concerned in blaming some person for the result. Is it really the meat packers? or the coal operators? or the farmers? or the manufacturers?

When we read a wild headline in our daily papers or listen to some theory of an imaginative fellow sufferer, we jump at the opportunity and accept it as truth. But a later piece of news or a new theory sends us pell mell off on another trail, and gradually we begin to realize how ridiculous we are making ourselves by all of this wild scramble to find a goat. In our opinion, we are a nation of goats, and if we are seeking one let us each turn to his neighbor and point the finger at him. Our neighbor will do the same to us and he will be no further wrong than we are.

The public is crazy about buying. It will buy anything at any price that is asked. The merchant fears to carry a stock of high-priced articles, but he finds that his customers want the high-priced articles, and he has to buy in order to meet the demands of his customers. He runs out of stock while the buying is red hot, and he frantically places his orders with the manufacturer. He must have immediate shipment irrespective of cost, and the manufacturer in order to supply his demands increases his costs in order to boost production. Just as long as such conditions exist there will be no relief. On the contrary, other advances may be expected at any and all times.

So long as the final consumer can and will pay the price asked, no one is badly hurt. As soon as the purchaser is seriously hurt, he will not purchase at the price and will refuse to buy or will be unable to buy, and then something has got to stop. The merchant will not be sending hurry orders to the manufacturer, and the manufacturer in his turn will get ahead on his orders and begin to accumulate a reserve stock, which will be costing him a very high production rate. He will very quickly realize, for he is watching the situation as feverishly and nervously as every one else, that he must reduce the cost of production or stop manufacturing. He cannot pile up unlimited quantities of products at a manufacturing price that will not move them.

The campaign to encourage sensible and sane buying is the best means of meeting the present crisis, for that will hasten the day when production will catch up with demand. Any attempt to criticise or persecute the producer, in order that he may lower the price and thus permit the public to continue its buying madness, is only putting off the day of reckoning. We must accept high prices and shortage of supplies unless and until we are perfectly willing to curtail the individual consumption. Foreign buying is blamed by some, but figures indicate that the home consumption is on so much larger a scale, that if we but look after own private buying, foreigners will be able to take care of themselves.

A little patience. A little deafness to the wild preachments of uncontrolled minds. A little self-control. A little time. We will come out of this all right. Uncle Sam is all right at heart, but he can only accomplish great things when the entire family stands behind him and each individual does his particular best.—*Trade News.*

Exhibit at the Camera Club

F. J. Mortimer, F.R.P.S., art editor of *The Amateur Photographer and Photography*, editor of *Photograms of the Year* and Secretary of The London Salon of Photography, has accepted an invitation to give a one-man show of some of his work at The Camera Club, No. 121 West 68th St., New York; and his exhibit will be displayed during the month of June, if it arrives from abroad in time.

Mr. Mortimer is one of the foremost pictorialists of Great Britain and, in photographic marine art, is unequaled in the world.

Asheville Photographers Organize

The Asheville Photographers' Association was formally organized at a meeting in Pelton's studio, Asheville, N. C. on April 10. Twelve photographers and studio employees were made charter members of the organization and the following officers elected: President, Ray Mathewson, of Brock & Mathewson; Vice-President, H. W. Pelton, and Secretary and Treasurer, V. S. Stephenson.

The purpose of the organization is to coöperate for better photographic service in Asheville and to fight the familiar coupon and ticket agents. The members voted against employing any of these agents, who solicit business from house to house and leave the work of photographing and reproducing from poor photographs in the hands of resident photographers.

Additional steps toward the safeguarding of both the photographers and customers will be worked out from time to time.

Rochester Section Photographers' Society

At a recent meeting of the Rochester section of the Photographers' Society of the State of New York, held in J. E. Mock's studio, the annual election of officers took place. John N. Heberger was elected President, Irving Saunders, Vice-President, and Joseph J. Heberger, Secretary and Treasurer. During the meeting Mr. Mock gave a talk on the State Photographers' Convention, which is to be held in Rochester in May, 1921.

Dr. Mees in England

Dr. C. E. Kenneth Mees, in addition to the other papers which he will read during his visit to England, will contribute a paper on "The Reaction of the Eye to Light" at the meeting of the Optical Society at the Imperial College of Science and Technology, Imperial Institute Road, South Kensington.

Bausch & Lomb's New Catalogue

Just from the press, with new illustrations throughout, this handsome catalogue will excite the admiration of all lovers of artistic printing and book-making.

It contains technical and practical information regarding photographic terms, optical properties of lenses and advice (illustrated) as to lens equipment for the various types of photography.

There are also complete descriptions, illustrations and latest prices of their famous Tessar Ic and IIb lenses for reflecting and hand cameras respectively; Protar Convertible Series for all-around photography and Series IV and V for side angle work—also the new Process Anastigmat for both black and white and color work, presented here for the first time; the Telephoto attachment and other accessories.

Write for your copy of this valuable lens-book to Bausch & Lomb Optical Company, Rochester, N. Y.

Cooper-Hewitt Light Popular

Since control of the Cooper-Hewitt Electric Company, Hoboken, N. J. was assumed last June by the General Electric Company, new business of the Company has more than doubled.

In order to meet the increased demand for industrial lighting outfits, as well as motion-picture apparatus, the Cooper-Hewitt Electric Company has recently purchased some adjoining property. This will eventually give more than double the present floor space.

Rapid strides have been made in the improvement and development of the Cooper-Hewitt lamp, chief among which is the standardization of the new 85 per cent. power factor outfit. Some radical improvements are under way which will materially increase the efficiency of this lamp.

The Engineering and Sales Departments have been materially increased by the acquisition of new men.

Royal Photographic Society Exhibition

The Royal Photographic Society of Great Britain will hold their sixty-fifth annual exhibition in September and October of this year. This is the most representative exhibition of photographic work in the world, and the section sent by American scientific men heretofore has sufficiently demonstrated the place held by this country in applied photography. It is very desirable that American scientific photography should be equally well represented in 1920, and, in order to enable this to be done with as little difficulty as possible, Prof. A. J. Newton has arranged to collect and forward American work intended for the Scientific section.

This work should consist of prints showing the use of photography for scientific purposes and its application to spectroscopy, astronomy, radiography, biology, etc. Photographs should reach Prof. Newton not later than Thursday, July 1, and should be mounted but not framed. Address, care the Eastman Kodak Co., Rochester, N. Y.

New Hampshire Photographers Meet

The Photographers' Association of New Hampshire held a two-days' get-together meeting at the Kimball Studio, Concord, N. H., on April 14 and 15. Practical demonstrations in paper, plates and the like were given by experts and factory demonstrators, and papers were read by members of the society.

The officers elected were W. H. Manahan, of Hillsborough, president; H. E. Cutler, of Keene, vice-president; George W. Perry, of Concord, secretary and treasurer.

The New Verito Lens

Although the old-type Verito has been popular the Experimental Department of the Wollensak Company has been on the alert for any possible new improvement. It seems that they have succeeded in their endeavor. A new Verito has been developed which has all of the characteristic qualities of the old lens, but practically eliminates the slight halation that was sometimes apparent with the old construction. Furthermore, this lens will give a softness at F:4 that is about comparable to the old lens at F:6, the result of which is that the professional photographer and the advanced amateur using the soft-focus type of lens can employ the objective at its widest opening without obtaining a displeasing fuzziness. The new construction makes possible exposure at a great speed with no danger of double line, halo or mushy appearance.

In enlarging with the new Verito it is unnecessary to use the diffusing stops as in the old construction. The construction is such that a beautiful degree of softness is obtained in the enlargement without the stops and the diffusion can be varied to suit the preference of the user. The old diffusing stops, which were numbered 1, 2 and 3, gave a diffusion which is comparable to the new Verito stopped to about F:8, F:9.5 and F:10 respectively, depending on the softness desired. The advantage of doing away with the stops lies in the fact that exposure is more than four times as rapid.

Further particulars can be obtained from the Wollensak Optical Company of Rochester, N. Y.

What's the Matter with the Country?

Something over nine thousand men have been talking in the different cities and towns, trying to tell the common people what is the matter with the country at the present time. Why railroads are not run on time, why goods cost so much, and a few hundred other things. They all have their own way of reasoning, but a vast majority of them close their addresses with the following reasons:

1. Those who are making more money than they ever expected to make before, men you might call get-rich-quick fellows, are spending the money and don't care how fast or how quick they get rid of it. They will pay any price if they can get the goods. A man walked into a hardware store and asked for a certain kind of hammer. The clerk said he was very sorry indeed, but they could not furnish it. The man said, "I will give you $25 for one of those hammers, I want it." The clerk still insisted they could not furnish the hammer, and if they could the price would be $3. "I don't care how or where you get it, get me one," said the customer, "and I will give you the $25." This is one of the things that is making the high cost of living.

2. There is a falling off of production. When men work as few hours as they possibly can and do as little as possible during those hours, it means they are producing about one-half of what they did before the war. If we can increase production to what it was from 1912 to 1914, and use our money economically, the high cost of living would soon be a thing of the past.—*Ohio Photo News.*

The New Model Heyde Exposure Meter

We have received from Herbert & Huesgen Co., New York, their interesting booklet on the New Model Heyde Exposure Meter, which is much more simplified than the former model that was on the market before the war. Instead of having twenty divisions for measuring the light on the subject to be photographed it is now divided into only eight divisions. The meter is of a convenient size that it can be carried in one's vest pocket. The booklet contains a special chapter on the use of the Heyde Meter for copying photographs and also enlarging on bromide and chloride papers.

We understood that the old models which Herbert & Huesgen formerly had on the market have been entirely discontinued by them and that they will handle only this new model. If you are interested in exposure meters send for a copy of this book.

The Copper Ferrocyanide Process

In the course of a demonstration before the Liverpool Amateur Photographic Society of the copper ferrocyanide process of intensifying and toning bromide prints with gum and pigment, Mr. T. H. Greenall stated that he now used 10 grains each of gelatin and gum arabic with 30 grains of white dextrine and no sugar in 6½ drams of water. He found burnt umber and ivory black better than Vandyke brown, which is somewhat soluble in caustic alkali.

Coating was done on a warm sheet of glass, and the coating must be as thin and as even as possible. If the pigment chips off in development it is due to thick coating. After development in warm water, the print is placed for a few minutes in a hardening bath of salt and alum, half an ounce of each in 18 ounces of water. This does away with any necessity to dry the print at this stage, and enables the pigment coating to withstand perfectly the process of sulphiding.

For partial bleaching with the object of obtaining intermediate sulphide tones, he used permanganate with salt and alum and without acid. This bleacher acts with remarkable evenness over the whole image. It must be followed with a clearing bath of sulphite and hydrochloric acid, or of sulphite, salt, and sulphuric acid.

If it is desired to lighten any area of half-tone which may appear too dark, this may be done by pouring warm water cautiously from the spout of a teapot on the part as the print lies under cold water; or, after treatment with the alum, the part may be lightened by gently drawing over it a very soft brush as the print lies under water.

If the high-lights or higher half-tones of the original are at all degraded the print may be partially bleached all over with a ferricyanide and bromide solution, and washed before coating with pigment. The bleached half-tones will sulphide up in the final print, but without added pigment, so that contrast is increased. This treatment may be applied locally, but the pigment used must be one which will harmonize with the sulphide image.—*Photography.*

Eastman Kodak Company Has Successful Year

The net profits of the Eastman Kodak Company in 1919 were $18,326,188, after all charges and Federal taxes, equivalent to $91.78 a share on the outstanding common stock after the deduction of preferred dividends.

In the preceding year net profits were $14,051,969, and $70.02 a share was earned on the common stock. Preferred dividends amounted to $369,492, and common dividends to $7,819,110, leaving a final surplus for the year of $10,137,136. The balance sheet at the close of the year showed total assets and liabilities of $88,718,112, against $76,648,002 in 1918.

The WORKROOM

CONTAINING THE LATEST PROCESSES, FORMULAE AND APPLIANCES NEEDFUL IN THE ART OF PHOTOGRAPHY FOR THE OPERATOR & WORKER

Gum Bichromate: The Cheapest Printing Process
Making Paper Prints from Daguerreotypes
Bromide Paper for Negatives
The Chemistry of the Zinc Process
Liver of Sulphur Toning
Protecting the Hands
Etching on Glass
Sulphite and Alkali
Photographing Flowers and Gardens
Diluting the Developer
The Reproduction of Negatives
Subject and Lighting in Screen-plate Color Photography
Enamelling Prints and Postcards
The Technic of Print Spotting
Photographic Materials and Processes

THE WORKROOM

By the Head Operator

Gum Bichromate: The Cheapest Printing Process

THOSE who find it necessary to study economy in the pursuit of their hobby should not lose sight of the fact that in the gum-bichromate process they have the very cheapest process of any. In fact, its cost is practically that of any good cartridge paper on which to make the prints, plus perhaps 5 per cent., or even less, for the chemicals which are applied to it. Except for very small prints, it is quite suitable for any size picture.

The first step in making gum prints is to prepare the sensitising solution. For this purpose we weigh out two hundred grains of clean gum arabic, tie it up in a muslin bag and hang it in an ounce of water. In a day or two the gum will have dissolved, and any impurities left in the bag may be thrown away. A 10 per cent. solution of potassium bichromate may also be made up.

A sheet of paper, which may be white cartridge or some similar kind, is laid on a drawing board, with a few pieces of newspaper a little larger than itself underneath it, and pinned down. A thick cream of moist water color and of the gum solution is mixed up, and is then thinned by the addition of about twice its bulk of the bichromate solution. Ivory black, raw umber, and burnt umber are good colors to start with: and the gum and pigment must be most thoroughly mixed together before adding the bichromate.

With a flat camel-hair or varnish brush the mixture is applied to the surface of the paper. Only a very thin coating should be given, not enough to do more than give it an olive color even with the black; and the brush strokes should be crossed to get the layer as regular as possible. It is customary to advocate at this stage the use of a "badger softener"—a costly article—to even up the coating, but this can be done quite satisfactorily by means of a cheap hat brush. It is held with the hairs vertical to the paper, and dabbed lightly over until all brush marks in the coating are invisible. If the brushes are well washed in cold water *immediately* after use they will last in good condition for a long time.

The paper soon dries. If the coating is done in the evening it will probably be quite dry before one goes to bed, and may be put away in a light-tight box or drawer for use the next day. The coating can be done by artificial light, without any precaution, or it can be carried out in weak daylight, provided the paper is not left to dry in the daylight; as it becomes sensitive on drying. It is best not to coat more paper than is required for immediate use, as, although it can be kept for a few days, it begins to deteriorate from the very first.

Printing is carried out by daylight, the best prints being obtained from negatives that are not too strong. If they give good prints on ordinary gas-light paper they will be found to be of the right depth for gum printing.

As the image is only faintly visible during printing, a print meter of some kind is necessary. M. Demachy's plan is simple and all that is needed. A little of the bichromate solution is brushed over a piece of plain paper and dried in the dark. This paper can then be cut up into strips a quarter of an inch wide. One such strip is shut up in a book with half an inch protruding, and is left exposed to daylight for an hour or two, or until it has gone as dark as it will. On starting to print, the strip is pulled out a little more, and exposed beside the printing frame. The freshly exposed piece gradually darkens until it matches the first. When this stage is reached the print meter is said to register "one tint," and the paper is pulled out a little further for a second tint to be reached in the same way. The exposure required varies with the negative, with the pigment, and with its depth, but is usually from two tints upward.

There are various ways in which a gum-bichromate print can be developed, but if granularity is to be avoided it is best to adopt the plan of immersing the print face upward for a minute or so in cold water and then allowing it to float face downward on the surface, taking great care to avoid air-bells under it, and also to avoid touching the surface with anything solid. It can be raised at intervals of four or five minutes, and it will be seen on doing so that the pigment is gradually falling away from the paper in those parts where the light has had least action, and is leaving the picture more and more visible.

When the action of development has gone far enough, the print is drained for a few moments and then laid face upward on a folded towel or similar absorbent surface to dry. If this is done in daylight the action of the light will so fix the picture to the paper that, if there is any trace of stain left on the paper from the bichromate, it can be wetted again, putting it this time in a 2 per cent. solution of potassium metabisulphite, or of acidified sulphite. This will remove the stain, and the print is then given two or three changes of water and dried.

The process as here described is a perfectly straightforward one, and is not intended for those who wish to exercise "control" over their prints. Carried out carefully in this way it should be possible to make half a dozen practically identical prints from the same negative. It is a good plan to have mastered the process to this extent before attempting anything in the way of "control;" but when this is wanted it can be got by developing with water with which a proportion of fine sawdust has been mixed, pouring this mixture of water and sawdust over those parts of the picture which are to be lightened. Prints to be treated in this way should be exposed a little longer than those to be developed automatically.

Another method of control, which was carried out very successfully by Mr. Mummery, was to develop by means of a fine spray of water. For this purpose, it is necessary to print very lightly. The print is wetted for a few moments, and is then laid upon a sheet of glass in an almost vertical position. A spray diffuser is used to direct the water on to the surface, and in this way to wash away more or less of the pigment as may seem to be necessary.—F. M. LEYCESTER, in *Photography*.

Making Paper Prints from Daguerreotypes

By ALFRED J. JARMAN

THERE are times when the photographer is called upon to copy a Daguerreotype and produce a number of prints therefrom. Owing, however, to the discoloration of the Daguerreotype, some difficulty is experienced in producing a good negative.

If the Dageurreotype is one that has been well preserved, there being no discoloring to contend with, no difficulty will present itself in the production of a really good negative.

The only doctoring allowable in any correction of the negative is the blocking out of the impress made by the metal mat that was used in the original mounting and sealing of this beautiful photographic production.

Whenever this slight defect occurs, vignetting on the back of the negative by means of the air brush and a suitable fluid opaque will prove to be thoroughly effective. By a slight removal of the opaque, by means of a very small tuft of absorbent cotton tied at the end of a small wood stick, any part of the picture extending into the margin may be uncovered and a clear and clean impression secured in the print without detriment or injury to the quality and true representation of the original. The background may also be made clean and uniform by employing the usual method of vignetting.

If a tarnished Daguerreotype must be cleaned before attempting to make a copy of it, then the cleaning must be carried out with the greatest care. In no case must the surface be touched, owing to the deposit forming the image being formed of an extremely thin deposit of metallic silver, while the tarnished parts consist of sulphite of silver.

Cleaning the Daguerreotype before Copying. Remove the plate from its case by cutting the binding that seals the glass plate, metal mat and portrait plate together. If any dust should be present upon the surface, blow it off. *Under no condition may it be dusted with a brush.* Such an act would remove the image entirely or so scratch it that the picture would be ruined. Prepare the following solution carefully and label it "*poison.*"

Potassium or sodium cyanide .	60 grs.
Distilled water	10 oz.
Stronger water ammonia . .	6 drops

As soon as the cyanide has dissolved, add the ammonia, shake the mixture well and it will be ready for use. Now take the Daguerreotype by one corner, wet it under the faucet and drain the excess of water from one corner. Then from a four-ounce glass graduate, pour on the cyanide mixtur along one side of the plate allowing it to flow all over, then drain into the graduate the excess of liquid. Continue this pouring on and off until the image and the whole surface brightens up.

Watch this proceeding closely and whenever an examination is desired, place it quickly under the faucet where a gentle stream of water must be kept constantly running. Rinse both sides, then examine. Generally the above treatment for one or two minutes will suffice to clear up the whole picture, when it must be well washed under the faucet again, then drain and finally rinsed with *distilled* water half a dozen times. It is then held by a pair of pliers at one corner, back down, over the flame of a spirit lamp or the flame of a gas stove, about six or eight inches from the flame, moving to and fro and blowing upon the surface to aid quick evaporation and perfect drying free from spots that would be certain to occur if the ordinary water from the faucet was used alone. Spots would be caused by the organic matter and salts which are always present in ordinary tap water. Distilled water must be used for the final rinsing.

Owing to the Daguerreotype being composed of an extremely thin veil of metallic silver, produced by the action of light upon a sensitive dry surface of iodide and bromide of silver, in the nascent state, brought out or developed by the vapor of mercury at 120° F., the resulting image is so constituted that it exists in what may be termed a state of metallic powder, hence the slightest touch will cause an abrasion.

Some Daguerreotypes are found to consist of a more solid deposit. This was brought about by a process of slightly gilding the developed image with gold by heating the plate while covered with a solution of hyposulphite of gold, which added greatly to its brilliancy as well as increasing the permanency of the image. The Daguerreotype was not altogether behind in the reproduction of pictures in natural colors. It was remarked by Daguerre himself, that the red bricks of a house and the green leaves of the trees and grass, are occasionally well represented. It was with such a picture, received from Daguerre on August 10, 1839, that Paul de la Roche paraded the city of Paris holding the picture high and exclaiming, "Painting Is Dead From this Day."

Copying the Daguerreotype. Procure a piece of board about eight or nine inches wide and a foot long. Cover this with dead black paper, pasting it firmly on the board. Then, when dry, place the Daguerreotype in the center, holding it in place by thumb tacks or pins driven in the board at the four corners and bent over to hold the plate firmly.

The top of the board must be made to lean over slightly toward the camera, sufficiently to eliminate side reflections. A sheet of white paper or càrdboard, about eight inches square, may now be placed at the bottom of the board at about right angles so as to give sufficient reflected light for illuminating the picture. The tilting will determine this.

When copying a Daguerreotype by artificial light it is advisable to illuminate the portrait from both sides, leaning the plate slightly over toward the camera as already described.

When a top and side light is used as in the ordinary studio the Daguerreotype may be turned slightly toward the side light, still leaning over toward the camera. Some care is necessary, however, in making this arrangement so as to prevent the full reflection of light from paper at the base, because a glare would cover the face of the picture and thus defeat the object sought. Attention to these simple points will quickly enable the operator to secure a perfect lighting.

Focussing the picture may now be proceeded with and the size determined. In the writer's practice, ordinary commercial dry plates or films may be used to secure good results, although in some instances a process film or plate with a moderately long exposure will produce the best result. This, however, can only be determined by the operator. As soon as the exposure has been made, the development, fixing and washing are carried out as for the making of any other negative. By employing Eastman tested chemicals you will obtain the best possible negative.

Crystal pyro used as the developing agent will yield negatives unsurpassed in printing quality and may be relied upon as a dependable developing chemical for negative making when copying a Daguerreotype, insuring the production of the best prints possible.

The prints accompanying the article were made upon Azo Hard X from a negative copied from a Daguerreotype in the manner described.

Making an Ambrotype from a Daguerreotype. Excellent so-called Ambrotypes, or glass positives, may be produced from a Daguerreotype by using a Seed Process Plate in place of an ordinary plate or film, such as would be used in copying when producing a negative.

All these so-called positives are, in reality, negatives including the Daguerreotype but the transparency is not. It is truly a diapositive exhibiting the properties of a positive when viewed by either transmitted or reflected light. A print taken therefrom would be a negative while a print taken from a so-called positive (an Ambrotype) would be a positive.

The so-called positive when made upon glass is only represented as such by reflected light. By transmitted light it is a negative. These beautiful so-called positives, once known as Ambrotypes, can often be sold to the owner of a Daguerreotype, who wishes it copied, because they more nearly duplicate the original than prints could possibly duplicate a Daguerrotype. Ambrotypes may be made by the use of Seed Process Plates in the following manner:

Focus on the Daguerreotype to be copied as described; place the process plate in the holder and expose for two or three times as long as if you were making a copy with a Seed 26X Plate. Develop in an Elon hydrochinon developer, being careful not to carry development too far. Fix in the hypo alum fixing-bath such as is used for fixing prints—not in a chrome alum bath, and as soon as fixed, wash the plate thoroughly to eliminate every trace of hypo. While still wet, place the plate in the following bleaching solution which must be used in a perfectly clean tray that has no metal exposed. One made of hard rubber or a similar composition is best.

Bleaching Solution

Distilled water	10 oz.
Bichloride of mercury	120 gr.
Salt	100 gr.

The water should be made warm (not hot) in a glass flask and the salts dissolved. As soon as the salts are thoroughly dissolved filter the solution through absorbent cotton, using a glass funnel. Then label the bottle: "Bleaching Solution—Poison."

As soon as the solution is quite cold, pour it into the tray and place the well-washed plate into it, rocking the tray carefully until the bleaching action is complete, which may be seen by examining the plate from the back. The plate may now be well washed in running water for about ten minutes, then dried spontaneously away from dust. Upon examination when wet or dry, it will present a beautiful picture when placed against a black background. The appearance might be described as opalescent.

As soon as it is dry it may be coated with Kodalak W. P. to protect the surface from atmospheric sulphurization as well as from moisture and other causes that might affect the compounded silver mercury picture. A coating of black varnish on the back of the plate will complete the Ambrotype when it may be framed in any way to suit the taste.

An ordinary Seed lantern slide plate may be used which will produce very brilliant pictures. The use of the process or transparency plates for this kind of photographic work is advantageous because they give a snap and brilliancy with clear shadows that is necessary for such productions as these.

The surface of these positives may be faintly colored with dry powder colors before varnishing if desired, making the finished picture very effective.

The writer has several portraits made seven years ago as described above and they are in as good condition as the day they were made.

A Daguerreotype, when cleaned, may be coated with Kodalak W. P. which, when dry, will effectually preserve the delicate surface from any further effects of sulphurization.—*Photo Digest.*

Bromide Paper for Negatives.

Now that the price of plates has increased, and it is to be feared that it will advance still further, also that of films, it behooves photographers, particularly amateurs, to consider carefully economical means of carrying on their adopted hobby.

Bromide paper has been proved to be by no means a makeshift substitute. The writer is acquainted with a photographer who for upward of five years has never exposed a plate or film, yet during that time has produced a great many presentable pictures, all by the aid of bromide paper; and, according to his narration, the percentage of failures is less than that experienced by many users of plates and films.

I was shown a considerable number of this worker's negatives and prints, and decided to try the method myself. I was surprised at the simplicity with which negatives could be produced, for it is a considerable advantage that no dark-room is necessary for development, an orange tinted lamp being safe, as in bromide printing.

A word as to the adaptation of the paper for exposure.

Take first the dark slide. A piece of the paper can be attached to a discarded glass negative by a touch of mountant at each corner. This must be allowed to dry under slight and even pressure. The paper has a tendency to curl inward to the emulsion side, which is an advantage, as it causes the paper to cling to the surface of the glass, thus maintaining an even surface.

A slight allowance may be necessary after focussing for the thickness of the paper from the normal position of the surface of the glass. Detach before development.

Users of the roll film should take care of the paper backing of their films. Procure the bromide paper in large sheets, and cut into strips to correspond with the paper backing. It should then be attached in the same way as the original film. Only "No. 1" end need be attached to the paper. It is advisable to wind upon a spool, commencing from "No. 1" end, and then to rewind upon another spool in the opposite direction. This will leave it ready for exposure in the camera in the correct order.

Should it be necessary to make a join, through the paper being too short for the entire length, care must be taken that such join does not occur in the middle of what will be an exposure.

The ideal method of adapting the papers for exposure is undoubtedly available to users of the film pack. Do *not* tear off the tabs as instructed, but leave them on after drawing them out in the usual way after the exposure of each separate film.

When the films are subsequently detached, and all the backing papers are arranged in numerical order, it is an easy task to substitute a piece of bromide paper in the same position. They should not, however, be stuck upon the paper backing but laid in position and fastened by a narrow strip of thin material or fairly strong paper with adhesive, laid over in contact with both the bromide and the backing papers. When dry the original "safety cover" should be placed in front of "*No. 1.*"

Withdraw the metal spring and black card support from the case and fold the tabs over in the same manner as they were in the first instance then reinsert the whole in the case and seal the two lower corners. The pack is then ready for use in the F. P. adapter. I have used the last-named method (quarter-plate size) with success; but I find that papers purchased in that size are scarcely long enough, as they are liable to protrude through the lower end of the mask. Therefore, there must be no margin wasted at the end where they are attached to the black paper support.

The best results are obtained by using a thin and fine grained paper.—W. Freeman in *Photography.*

The Chemistry of the Zinc Process

Many photographers who have never before attempted the recovery of silver have come to the conclusion that they have a silver mine in discarded fixing-baths that is worth working, and so they have, but there is an expense attached to silver recovery that plays a very important part in determining the profits. There is a right way and a wrong way and the right way produces a big profit and the wrong way only a small one.

An exhausted fixing-bath that has been used for a large number of films or plates should be heavily loaded with silver and at the present price of silver should be worth about 50 cents a gallon. If you discard such a fixing-bath once a week and it is a five gallon bath, it is certainly worth while to recover the silver from it, but it would not be advisable to send the silver sludge to a refinery more often than every six months and it would be better to wait a year.

You have the original cost of zinc as a first expense and this zinc would not be completely exhausted in six months' time, treating only five gallons of solution each week. Freight charges or express charges would be approximately the same whether you send the silver-zinc sludge from one month's or twelve months' silver recovery and, in addition, there is a refining charge which is the same whether you send a small or a large amount of sludge to be refined.

An estimate for the recovery from five gallons of thoroughly exhausted fixing-bath each week for a year would be $130.00 and a broad estimate of the zinc used at 45 cents a pound would be $9.00. By making equally broad allowances for transportation and assaying charges the net return should be well over $100.00.

It is readily seen how one might be overly anxious about getting a return from his silver recovery and have most all of the saving eaten up by expense.

Further inquiries indicate that more about the chemistry of this process will clear up points that have not been thoroughly understood, or emphasize instructions that have not been carefully followed.

The amount of exhausted fixing bath that is to be treated should be about the amount that is discarded each week. The reason for our making such a recommendation is that the smallest amount of zinc can be used, and used over and over again until exhausted by keeping the recovery process in continual operation. It would probably take a year to thoroughly exhaust the original charge and the small amount of zinc added from time to time to speed up the process is hardly worth mentioning when the value of the silver recovered during the year is considered.

We have stated that the fixing solution, if alkaline, should be made neutral by adding acid, testing with litmus paper to determine when neutral and that it should then be made slightly acid by adding 3 ounces of 28 per cent. acetic acid to each gallon of solution. Someone who has never had occasion to test with litmus paper asks how the test is made. Drop in a strip of red and a strip of blue litmus paper. If nothing happens, the bath is neutral. If the red paper turns blue, the bath is alkaline; if the blue paper turns red it is acid. To neutralize an alkaline bath, drop in a strip of the blue litmus paper and and add acetic acid until the litmus just begins to turn red. To neutralize an acid bath, drop in a strip of red litmus paper and add an alkali until the litmus just begins to turn blue.

It is necessary to have the bath neutral so that a definite amount of acid may be added, 1 ounce of glacial or 3 ounces of 28 per cent. acetic acid to the gallon. This amount of acid is necessary for the rapid working of the process. If any considerable excess of this amount is present the acid dissolves the zinc, which is, therefore, wasted because it does not recover the silver as intended. If an exhausted fixing-bath is acid there is no simple way of telling how much acid it contains, so it is best to make it neutral and then add the proper amount of acid.

Stirring the bath is also necessary to bring the zinc in contact with the silver that is in solution. Stir the solution several times each day.

Exhausted hypo consists of a mixture of sodium thiosulphate, silver thiosulphate with sodium acetate, alum, etc., and in addition either free acetic acid, or if nearly exhausted it will contain sodium carbonate as a result of developer carried over by the films and prints.

Zinc will replace the silver from an acid solution of silver thiosulphate by plating out the silver on the zinc as a black slimy powder. After the silver has been precipitated, the bath contains as a sediment, zinc covered with a black sludge of metallic silver. And in solution we have zinc thiosulphate, zinc acetate, sodium thiosulphate, free acid and traces of iron salts which are present as impurities.

One photographer tested this solution and thought he found silver, although actually all the silver had been removed. He had not made the solution sufficiently acid in making his test. When it is thought that all of the silver has been precipitated, take one ounce of the liquid in a graduate, making acid with one-half ounce of 28 per cent. acetic acid, then add 100 minims of 10 per cent. sodium sulphide solution. A white precipitate indicates that all of the silver has been removed—a black precipitate that some of the silver is still in solution and that the solution should be stirred and allowed to stand longer. The above test will not fail.

But if the required amount of acid is not added when the test is made, the sodium sulphide makes the solution alkaline and iron sulphide is formed which is black and this, combined with the white zinc sulphide, gives a precipitate which leads one to believe there is silver still in solution.

Treat your exhausted fixing-baths as fast as they are discarded. Acidify as recommended above. Add two pounds of granular zinc to each gallon of solution. Stir occasionally and in twenty-four hours test to see if precipitation is complete. If it is, decant off liquid when all of the sludge has settled. Repeat this operation without adding more zinc until the process slows up so that three or four days are required for complete recovery. Then add a pound or two of zinc to again speed up the process.

Do not allow the solution to stand longer than is actually necessary for complete precipitation as the acid will dissolve a certain amount of zinc after it has performed its function of aiding the silver to plate out on the zinc. Decant the liquid as soon as the test shows the silver has been precipitated.

And do not send the sludge to a refiner until you have an amount that will make the shipping and refining charges a small percentage of the recovery.—*Studio Light.*

Liver of Sulphur Toning

There seems to be in some quarters a difficulty in getting satisfactory tones on bromide prints with the ordinary sulphide toning process. Instead of obtaining good rich sepia tones a rusty color is got, due sometimes to a want of density in the negatives, or to overexposure followed by insufficient developing, while in other cases no modification in working will give the desired color. To those who find themselves troubled in this way we recommend a trial of liver of sulphur (potassa sulphurata) as a toning agent. This has the advantage of giving a variety of colors, ranging from a warm black to sepia, including some very fine purple browns. One of its good points is an absence of the slight reducing tendency of the ferricyanide bleacher, and another is that even if the prints are inclined to be weak there is no liability to give a "ginger" color. The process is a simple one; the toning bath consists only of sixty grains of "liver" to a pint of warm water, a few drops of ammonia being added when solution is complete. This should be raised to a temperature of about 100° F., and the print immersed until the desired color is reached. A little allowance must be made for the further toning action, which goes on in the subsequent washing. Some papers will stand the heat of the solution without requiring hardening, but if there is any tendency to melt the prints should receive a preliminary bath of formalin, a convenient strength being two ounces to the pint. As with the hypo-alum bath, all papers will not tone to sepia in the liver of sulphur solution, some refusing to go beyond a purple black similar to P. O. P. A few trials with various papers will show the most suitable makes.—*B. J.*

Protecting the Hands

It is very difficult to carry out photographic operations without occasionally getting some of the solutions on the skin. In most cases no harm results from so doing. The various reagents employed are quite innocuous, if we take the ordinary precaution of a wash after working with any chemicals; but some of them affect tender skins unpleasantly, and others may leave stains which cannot be got rid of quickly.

Rubber-gloves and finger-stalls are obtainable. They are open to the objection that they are awkward things in which to do any manipulative work if they are thick; while if they are thin they are very easily damaged—the edge of a plate may cut them right through in a moment. So that, unless circumstances make some such protection absolutely necessary—which is not usually the case in ordinary photography—it is best to look elsewhere for something to keep the solutions from affecting the skin.

One of the best methods known to the writer consists of applying as a protection a very thin coating of wax. Paraffin-wax, such as is used for candles, will do very well, or beeswax may be employed. It is applied by making a solution of it in some volatile solvent such as benzole. A few drops of the solution are poured on to the fingers and quickly rubbed over. The solvent evaporates almost instantly, and leaves behind it a thin film of the wax, which should not be thick enough to be perceptible at all, but which, nevertheless, will be found to be a great protection by the way, in which it fills up the pores and crevices. It is particularly useful in the neighborhood of the nails, as stains are almost always seen at their worst there. By the use of a firm wax for the purpose there is no fear of making a greasy mark on anything that is touched and the protection afforded will prove to be very effective.

After the work is done a wash with nail-brush and soap, using warm water, will remove all trace of the wax. The effect is that the skin is actually more supple and soft after the treatment than it was before. Wax is only a partial protection against the action of strongly alkaline solutions, which some people find so objectionable. In time the alkali will saponify the wax and will remove it, so that the fingers should be kept out of such liquids as much as possible.

Much can be done in the way of protecting the hands by having a basin of water handy, and rinsing the fingers therein as often as they are contaminated by the solution. If it is developer which is in use, the addition of a little metabisulphite to the water, or of a crystal or two of sodium sulphite and of citric acid will be found advantageous.—F. RANDALL, in *The Amateur Photographer.*

Etching on Glass

THE following information may be of use to anyone experimenting in this direction. Glass is etched in hydrofluoric acid. If placed in the acid the etching is clear. If suspended over the fumes a matt effect will be obtained. One method of securing etched designs is to use the resist for making zinc blocks. The glass must be thoroughly cleaned and freed from grease by first soaking in a 5 per cent. solution of caustic soda, well washed and then rubbed over with tripoli powder and water, again rinsed and placed in a rack to drain. Before etching, give a final clean with a mixture of iodin and industrial spirit.

Industrial spirit	2 oz.
Iodin	¼ oz.

Coat with the following bichromated albumen solution: White of one new-laid egg, well beaten up, then add 20 ozs. of water and ¼ of an oz. of bichromate of ammonia and 5 drops .880 ammonia and filter. Fix glass on a whirler and pour this mixture over, drain excess off and whirl dry. Expose under a good line negative. After exposure roll up with stone-to-stone re-transfer ink and develop in running water by passing a swab of cotton-wool gently over the surface, when the design will show up in black ink. Powder the image up with bitumen which will adhere to the greasy ink, then gently warm until the bitumen glazes and turns a deep black, allow to cool gradually. If the glass is held over the fumes of the acid the portion uncovered will etch matt, leaving the ink-protected glass polished. Should the design be required to be etched, a positive instead of a negative must be used, or the ink resist obtained from the negative can be reversed as follows. Flow over the following solution:

Industrial methylated spirit or alcohol	10 oz.
Shellac	1 oz.
Dragons' blood (best)	6 oz.

When this coating is dry, remove original ink image with benzole, the resist being now dragons' blood and shellac.

The asphalt solution is made as follows:

Purified Syrian asphalt	1 oz.
Anhydrous benzole	10 oz.
Oil of lavender	⅛ oz.
Venice turpentine	⅛ oz.

Filter well, coat as before, and whirl dry. Exposure to enclosed arc lamp takes about one hour, or to bright light about five to eight hours. Develop with the following mixture:

Spirits of turpentine	6 oz.
Benzole	1 oz.
Linseed oil	½ oz.

When development is complete wash well with a spray of water. A quicker way of working the above method is first to coat the glass with the asphalt solution and dry. Then coat over this a bichromated glue solution:

Water	5 to 8 oz.
Le Page's process glue	5 oz.
10 per cent. sol. bichromate of ammonia	3 oz.
Ammonia, 0.880	5 drops.

Well beat up and filter and coat and whirl dry. Exposure to an enclosed arc lamp will take about eight minutes, to daylight fifteen to twenty minutes. After exposure, develop in running water, dye the glue image with a methyl violet dye solution, wash again and dry. When dry place in the developing bath previously described, which will dissolve away the asphalt unprotected by glue, wash again and remove glue film with a weak nitric acid solution. A design may be drawn on a good surface paper with the following ink:

Soap	20 oz.
Glycerin	8 oz.
Tallow	2 oz.
Water	4 oz.
Borax	1 oz.
Fluorspar	2 oz.
Lamp black	¾ oz.

and then transferred to the glass by pressure, which is then etched in a 5 per cent. solution of sulphuric acid, the acid reacts with the fluorspar in the ink and etches the glass.

Great care must be exercised in handling hydrofluoric acid as it causes sores to form on the skin; the fumes will also form a bloom over any glassware near. This remark especially refers to photographic lenses or spectacles.—*B. J.*

Sulphite and Alkali

A POINT which recently came under our notice may be of interest to some of the many photographers who use pyro-soda developers. Our friend was complaining of the yellow tinge which pervaded all his negatives, and asked us to test a sample of the sulphite which he was using as a preservative. This appeared to be quite satisfactory, and the quantity which he was using should have been ample to prevent any discoloration of the solution. On investigating his methods we found that he was making rather concentrated stock solutions in considerable quantities, enough, say, to last a month or two at a time. When freshly mixed the developer was quite satisfactory, but it quickly deteriorated in spite of the fact that he was also using acid bisulphite in the pyro solution. We found, however, that he was mixing at least half the prescribed quantity of sulphite with the carbonate of soda, being under the impression that the salt would crystallize out if it were all used for the pyro solution. Upon making a test with dry pyro and the carbonate and sulphite solution alone it appeared as if no sulphite were present, although three time the weight of the pyro was actually present. It would appear, therefore, that the alkali had practically destroyed the action of the sulphite, which had been kept in solution with it. On making fresh stock with all the sulphite in the pyro solution the trouble disappeared, and the developer worked cleanly to the end.—*B. J.*

Photographing Flowers and Gardens

THE photography of flowers is no more difficult than any other kind of photography; in fact, it is much more easily dealt with than, say, the photography of animals or anything animate. The reason that so many of the pictures we see are crude and inartistic is mainly because they have been produced to order, and when a nurseryman or florist desires a photograph of flowers for business purposes he is apt to imagine that anyone can do that sort of thing, *i. e.*, anyone who can expose a plate—ergo, he goes to the cheapest man, or even asks some friend who happens to possess a camera to come and do the job for him.

Some of the best floral photographs I have ever seen have been the work of amateurs, and clearly show themselves to be the result of careful work, and not only careful, but carefully thought out, carefully lighted, and, if I may use the expression with regard to flowers, carefully posed and carefully grouped.

In dealing with this class of work from the professional's point of view, it will be best perhaps to consider firstly how to proceed with that portion of the work which has to be done to order—that is to say, the photographing of flowers in the garden, the greenhouse, or the conservatory, cut blooms in the house, or the floral tributes in the churchyard or cemetery, and afterward to consider what may be done to our own order with a view to publication.

When the order is to photograph a garden, it is obvious that we are to a certain extent handicapped—we cannot alter the conditions, we cannot, so to speak, pose the flowers, and we cannot alter the grouping. There is the garden, and it is our bounden duty to do the best we can with it. Now, if the cheap man before-mentioned were sent for to do the work and when he arrived the lighting was all wrong, the chances are he would not be able to afford to wait until it changed, but would simply set to work and expose his plate or plates, and get it over. This must not, however, be our method. The first thing is to calculate when the light will be best. This is almost sure to be either early morning or late afternoon, as a far better result is obtainable when the sun is low on the horizon than when it is at all strong. The next point is to select the position or positions from which the photograph is to be taken. If the garden is wanted as a whole, it will be, of course, a necessity to expose a plate upon it, and here a wide or at least a mid-angle lens will in most cases be necessary. The one plate exposed to suit the customer's requirements, one or two more should be taken to suit your own taste, including less in the picture. In this case it will be possible to use a longer focus lens.

I personally prefer a single lens for this description of work, and it will be found in nine cases out of every ten that, although a few are sure to be ordered of the whole garden, yet the main order will be for the more tasteful and artistic pictures, which do not include the whole of the surroundings, but merely the portions that best lend themselves to pictorial effect. Many photographers—and not only beginners—have a habit of standing their tripod at one regular height. This is all very well so far as saving personal inconvenience goes, but it does not enable the operator to obtain the best effects. In the case of the photography of flowers in a garden, the camera requires to be much lower, or the effect will be somewhat resembling a picture taken from a balloon or an airship. The better way is to try at three or four different heights, and carefully note the difference, which will be found to be far greater than one might at first suppose. Care should be taken to avoid too much sky, and equally to avoid an excess of foreground.

As the flowers in a garden are mostly of varied colors, and some, at least, of the colors which, with an ordinary plate would assimilate with the color of the foliage, it is an absolute necessity to use a panchromatic plate and a suitable filter to obtain the correct color-rendering. A full exposure should be given, better a trifle over than a trifle under, and development carried to the correct point, and not a vestige farther. There are some subjects that a shade of overdevelopment will not hurt; but with delicate subjects such as flowers it is necessary to produce a delicate negative, with full gradation and without any clogging up of the detail. A mere impressionist picture is not what is required, but as nearly as it can be produced a perfect representation of the flowers in black and white, or, rather, in every natural gradation from almost a pure black to an almost pure white.

From the garden we pass to the greenhouse or hothouse of the nurseryman, and here we find ourselves rather more heavily handicapped than in the garden. The space is nearly all taken up by the flowers themselves, and that which is at our disposal is limited indeed. In nearly every case we are reduced to the necessity of using a wide angle lens, or affixing a "Planiscope" to a longer focus one, and so practically converting that into a wide angle. The latter, in some instances, will be found the better plan. First select the point of view and then try the effect of first one lens and then the other, both with and without the "Planiscope" attachment. Whichever you finally select, do not forget to give a full exposure. Should figures be required, as is often the case in this class of work, pose them as far away from the camera as possible and as though they were actually working, watering, pruning, tying up, disbudding, etc., and in each case just in a position where they will help to break up the straight lines, which are all too prominent in a greenhouse. It is quite possible to obtain a technically good result which shall at the same time not be without its art side, and our main aim should be to combine the two.

Most greenhouses will be found to contain only one kind of flower. It may be roses, carnations, chrysanthemums, sweet peas, or some other species; but in many cases they will be all of one color; in the case of pink or red or yellow roses the panchromatic or, at least, an orthochromatic plate should be used, and the same applies to the colored carnations, chrysanthemums, sweet peas, etc. But with white roses or carnations an ordinary back plate will suffice. Should the house contain more than one species of plant and multi-colored blooms, the panchromatic plate must be used.

Passing to the conservatory, much of the handicapping is removed, the flowers are mostly in pots, and so can be shifted and grouped so as to break up masses of any one color, and foliage plants can be introduced into the grouping so that really attractive and artistic effects can be produced. There is also far less of the straight-line element, and with the expenditure of a little time and thought and a modicum of artistic feeling, pictorial photographs should be obtained. Possibly there may be some pet plant or plants which require to be photographed separately. When such is the case it will be found preferable to remove them from the conservatory into a room where a soft sidelight can be obtained. In most cases it will be found that an angle of 25° to 30° will give the best effect, and a background can be used, of a shade varying according to the color of the flowers and their foliage. In some cases, as with white flowers and light green foliage, the black velvet focussing cloth can be used, being hung sufficiently far behind the plant to avoid any creases or folds showing in the picture. Should the blooms be red or yellow, a white table-cloth will come in very handy, as, according to the distance behind, so can the shade of the background be varied from dark gray to almost pure white. Here again the orthochromatic plate should be brought into play, and once more I would urge the necessity for a full exposure. Cut blooms should be treated in the same manner, special attention being given to their grouping and arrangement, and a suitable vase or bowl being used for their arrangement. If a single bloom or spray is desired to be photographed, rather a good effect can be produced by laying it on a mirror and photographing it with the reflection therein.

Although the cucumber cannot strictly be called a flower, yet very pretty and effective pictures can be made of a house used exclusively for their culture—the trailing and clinging vines with the admixture of bloom and cucumbers of varying sizes lend themselves to cover up the straight lines and help the artist to produce a picture worth the taking.

With regard to flowers in the shape of wreaths and crosses on the newly made graves of the departed, it is now the fashion to have these photographed for the purpose of presentation to the donors, and nearly every photographer at some time or other is sure to receive orders to proceed to the cemetery or churchyard in order to make a picture while the flowers are fresh. Many of the photographs we see of graves are merely a mass of flowers jumbled together, wreaths and crosses indistinguishable from each other, but through the whole the shape of the grave is clearly distinguishable, and the whole calculated to raise a feeling of repulsion rather than the pleasurable feeling that the sight of flowers usually induces. The main causes of these failures are to be found in bad choice of light, use of unbacked ordinary plates, underexposure and overdevelopment. This may seem a sweeping denunciation, but it is not unjustified. The order comes in to photograph a grave, and an assistant is straightway sent off to do it. Arrived on the spot, he selects his point of view, focusses, stops down to about *f*/64, and, the light being strong and the flowers mainly white, gives a shutter exposure and considers he has done all that is necessary in the circumstances. The better way is to wait until sunset, then go yourself armed with a couple of backed self-filter orthochromatic plates. On arrival the first necessity is to re-arrange the grouping of the wreaths, etc. Instead of the solid mass of flowers, carefully separate them, so as to leave a little space between each offering. Then bring those from the side not seen to the front and lay them carefully on the bare ground in front of the mound so that every wreath shall be visible in the picture, and that the shape shall not be so suggestive to the morbid feelings. Some people like the cards and, if possible, the writing on them to be visible, but this is not at all a necessity; it spoils the picture as a picture, and, like the shape of the mound, always suggests death rather than the suggestion of resurrection, which the flowers themselves are intended to produce. Now focus very carefully, and use the largest diaphragm consistent with the sharpness of the flowers themselves, but at the same time keeping all surroundings indistinct and out of focus. Expose carefully and fully, choosing the moment when there is no wind to move the fronds of maiden-hair or asparagus fern. Before packing up, be very careful to replace all the wreaths in the positions in which you originally found them, or you may get into serious trouble with the sexton or cemetery-keeper who arranged them in the first place, although, possibly, the trouble might be easily "liquidated." On return home develop the plates yourself, and have them printed as quickly as possible, as delays in these cases are dangerous to the size of the order. A really good picture of the flowers will in all probability bring an order for the monument to be photographed later on.

When photographing flowers for the purpose of publication as studies or as picture postcards, cut blooms are the best to operate upon. They should be carefully selected, and only perfect blooms should be used. It will not do to buy a selection from a street seller and proceed to make photographs of them. Obtain your subjects from a nurseryman or a florist, and photograph them in the studio, lighting them as carefully as you would a human subject. Do not photograph bunches, but rather separate blooms or groups of two or three. See that your backgrounds are not too light or too dark, and where a vase or bowl is introduced, let it be at least artistic in shape or design, and in no wise obtrusive to the detriment of the flowers. They are the subject of the picture, not the vase. A series of flower subjects as picture postcards should, if artistically produced, find a ready sale; the wild flowers of England alone would make a good series, without taking into consideration the multitude of products of the nurseryman and gardener's art.—*B. J.*

Diluting the Developer

When development is carried out in a dish, using the solution at the strength specified in the instructions, it is safe to conclude that only a very small proportion of the total quantity of the active developing agent present is required for the work of developing; the rest is, to a large extent, wasted. When the cost of developers was small this was no great matter, and was counterbalanced by certain conveniences which follow from such a course, one of which is that development is speedy. It is customary with tank development to use a much weaker solution: and the question must have arisen in many minds whether, now that economy of solutions has become so important, equally dilute developers may not be employed in all cases.

It is well, at the outset, to remove any misconceptions that may prevail as to the effect of concentration of the developer upon the character of the negative. It has been contended that a weak developer gives a softer and more harmonious result than a stronger one; but although such a negative may be the result, it is not correct to attribute it to the fact that the developer is weaker. It is actually caused by the development not being carried quite as far. When development takes place much more slowly there is a very natural tendency on the part of the photographer to stop it at an earlier stage, and this results in the negative being softer.

Careful experiments and measurements have shown, however, that, as far as the gradation is concerned, the degree of concentration of the developer, within very wide limits, does not influence the character of the negative at all. If we get a soft harmonious result with a weak developer we can get an identical result with a strong one, provided we stop development at the right moment. There is often a difference in the appearance of the two negatives, it is true, but this is due to another factor being introduced. The negative developed in the stronger solution is finished much more rapidly, and it is therefore highly probable that the sensitive emulsion is exposed to the light of the dark-room for a much shorter time. It should not be so, but it very often is. The consequence is that the more quickly developed result looks brighter or cleaner, and the photographer is liable to think from this fact that it is actually harder in character. The prints from the two plates will be identical, however, provided the point to which development was carried was the same in each case.

It follows, therefore, that the proportion of water given in a developer formula may be varied within very wide limits at the discretion of the photographer without affecting the quality of his results, provided he is careful to alter the time of development accordingly. For comparatively small changes—and in this sense a doubling of the quantity of water is a comparatively small one—the time required may be taken as proportional to the quantity of water. If, then, we use twice as much water we must allow the developer twice as long to act; if we treble it we must allow three times as long, and so on. This may serve as an approximate guide, the actual times being modified a little one way or the other as experience may show to be necessary.

The question arises whether a greater degree of dilution than that specified by the formula is desirable or not. The first point to settle is whether the longer time required is inconvenient, as there is no way by which the development can be made rapid, still keeping the same degree of dilution. This is a question which the photographer must answer for himself. If he decides that he can give the longer time, the only point which need be emphasized is the importance of ensuring no longer exposure to the dark-room light, however "safe" this may be.

Subject to certain reservations then, we may dilute the developer at will. These reservations are twofold: One is that we must not use the solution so dilute that it does not contain enough of the developing agent to do the work. On this point we cannot give definite figures. It is impossible—if it were desirable on other grounds, which it is not—to proportion the developer so that it is all used up in the process of development. Two negatives on the same make of plate, and developed to the same extent, may require totally different quantities of the active developing agent for the work. One may be of some subject mostly shadow, with a few small strong high-lights; the other may be of a light subject, with a few small points of deep shadow. The first would require comparatively little of the developing substance, the latter a comparatively large quantity. Again, long before the last traces of the developer have been used up, the solution has become inoperative from the presence of by-products of the reaction. Therefore, we must take care to have enough developer present to make quite certain that no matter how great may be the demands of the subject upon it, there is still enough to do the work, before the action is unduly checked by such products.

The other reservation is that, when development is very prolonged, even if the plate is completely protected from light, the result will be dirty. Not only does the developer tend to oxidize and produce stain: but, for some reason or another, the negatives are more or less foggy, even with a very weak solution, if the time taken is very great.

To be quite on the safe side, we may put the longest time at about three-quarters of an hour, and the greatest degree of dilution necessary to ensure enough of the developing agent being present at about three times that given in the usual formulæ for dish development. Thus, if we take the formula on the plate box and increase the quantity of water until the total bulk is three times that given in the formula, and then use enough of this dilute solution to cover the plate easily in the dish—say, one fluidounce to each quarter-plate or equivalent area—we shall be on the safe side. It will be seen that this means considerable economy in developer in the case of dish development formulæ. The formulæ for tank work are usually as dilute as it is advisable to use.—*Photography.*

The Reproduction of Negatives

For a variety of reasons the necessity occasionally arises to reproduce negatives either in their original size or upon an enlarged or reduced scale. It may be that a negative of a celebrity or of a unique ceremony may be deemed of such value that it is desired to keep it as a "master" record and to print from the reproductions only, or a negative may be too thin or too dense to yield good prints, and it may be deemed too risky to submit it to the ordinary processes of intensification or reduction; or, again, it may be so stained or damaged that perfect copies cannot be printed in the ordinary way. Besides this, a separate negative of a portion only of the subject is needed, or enlarged or reduced sizes wanted for carbon or platinum printing. As we can control the contrast and density at two stages, the transparency and the negative from it, it is often possible to obtain results vastly superior to the original.

There are many ways of effecting our purpose, but I propose only to deal fully with that which most photographers will find most convenient, which is the making of as perfect as possible a transparency, and from that the negative. The character of the original will largely affect the selection of the plates used for the purpose, as it may be necessary to modify the result considerably, and I therefore detail the kind of plates necessary to do this effectively, at the same time remarking that with average negatives any good brand of ordinary speed or slow plate may be used throughout.

For very thin negatives "process" plates will give the best results, as it is easy with these to obtain in the transparency considerably more contrast than there is in the original. Moreover, they are more amenable to intensification than ordinary plates, and there is very little risk of fogging.

Dense thick negatives, on the other hand, call for a more delicate film; special transparency plates coated with the emulsion used for lantern plates will be found to give the necessary delicacy of image. Failing these, an "ordinary" or "fine grain" plate will answer very well. Those who work carbon will find the special transparency tissue very suitable, as very thin delicate prints may be made upon a glass support, and if necessary these may be strengthened by staining or dyeing, or even by intensification with pyro and silver solution. If the negative is to be made of a larger size than the transparency, the absence of grain in the carbon image renders it particularly suitable.

As a general rule I prefer to use a non-staining developer such as metol-hydroquinone, amidol, or Azol for the transparency. The same developers or pyro-soda may be used for the negative at the operator's discretion.

The exposure for the transparency may either be by contact or in the camera. For dense negatives the first is, as a rule, most satisfactory, while for thin ones the camera method is preferable. When making contact transparencies we must be careful to avoid parallax, which will destroy the sharpness in such areas as are not in actual contact. Modern negative glass is rarely quite flat, and as it is usually coated on the concave side it is possible to have the negative and sensitive plate touching at the corners only. Therefore it is necessary to have enough pressure to secure moderately good contact all over, and for this a frame with a plate glass front and strong springs is necessary. With very fine diagram subjects I have even had to use a process frame with $\frac{3}{8}$-in. plate-glass and screw pressure to avoid a spreading of the lines. In any case the printing frame should be kept quite still during the exposure, which should be made as far as convenient from an illuminant which is small in area. To give an example, I would give a distance of 5 ft. or 6 ft. from an unscreened inverted gas-burner, while with very thin negatives even a greater distance is recommended. The exposure should be long enough to yield an image which shows little if any clear glass. Lantern-slide quality is too hard, and will give harsh results. When using the camera the negative should be illuminated by a white cardboard reflector, and care must be taken to avoid shadows upon this, or the transparencies will be uneven in density. I frequently make both transparency and negative with an ordinary enlarging lantern, fixing up the plates on the easel, under the heads of small drawing-pins. As a rule, one or two thicknesses of ground glass should be interposed between the light and the condenser, except with very thin negatives, when a strong light and the full aperture of the lens will tend to give softness.

At this stage we may do much to even up our image either by locally shading the negative during contact printing or in the camera, or by shading the image in the way usual with bromide enlargements when the lantern is used. If a cracked or broken negative has to be dealt with, it should be printed by contact and kept in motion in a circular direction meanwhile. In this case we must risk parallax to avoid a greater evil. If such cracked negatives are very thin, they may be exposed through one or two thicknesses of white blotting-paper placed outside the frame, as this greatly reduces the effect of the edges of the crack.

Having obtained our transparency, we may proceed to intensify or reduce it, either all over or locally, and when dry to retouch or work it up until it is as perfect as possible. On a transparency we have the power of strengthening shadows as we do lights in a negative, so that "knifing" is not absolutely necessary.

The exposure of the negative plate may usually be by contact unless the size has to be varied, when the camera or lantern may be used in the way already described.

If the transparency is still lacking in strength a process plate may be used and intensified in turn; by this treatment quite a vigorous negative may be obtained from a mere ghost of an original. In no case do I recommend the use of very rapid plates for reproduction work, as not only is the grain coarser, but there is not the latitude in exposure and amenability to variations in development found in a slower plate.

If reversed negatives are required, either the transparency or the negative must be made in the camera, the film side of the original being turned away from the lens. A simpler way by contact is to use a portrait film for one or the other exposure, putting the back of the film in contact with the film of the plate; as a matter of fact, with ordinary subjects either side of a film negative may be printed from without perceptible loss of sharpness.

The simplest way to reproduce a negative is to copy a print, and this is extensively done in many establishments. There is, however, usually a noticeable loss of quality when bromide or platinum prints are used, and I much prefer to work from a rather lightly printed P. O. P. copy, which is put under pressure in a plate-glass printing frame and copied *without toning or fixing*. With care the exposure may be made by daylight if all preparations are made before uncovering the print, but a better plan is to expose by ordinary metallic-filament lamps or even incandescent gas light, which have practically no effect on the sensitive paper.

Several processes have been published by which a negative can be produced direct from another negative, but they can hardly be said to be adapted for everyday use. If a plate be greatly overexposed, a reversed image is produced, but usually of a foggy character. Sensitizing an ordinary dry plate in bichromate, and printing until the image is visible at the back and then developing and fixing, will produce a negative from a negative, the exposed parts having become insoluble and impermeable to the developer which acts upon the remainder of the film.

The "dusting on" or powder process will give excellent results by a single operation, but the manipulations required are too delicate for the average photographer. All the foregoing "direct processes" yield reversed negatives, which are only needed for single transfer carbon and certain photo-mechanical processes.—*B. J.*

Subject and Lighting in Screen-plate Color Photography

The beginner in color photography by the screen plate processes, whose aim is the pictorial representation of Nature in her natural colors, will find that he has much to learn—and also to unlearn—before he can use his medium and produce results of high artistic excellence, if his previous experience has been confined to monochrome prints. I speak from the artistic aspect of the case as well as from the point of view of the technical photographer, to whom the mastery of the more popular screen-plate color processes is more or less dependent upon the following out of instructions definitely laid down. Perhaps some notes on the subject in color photography, generally about the last to be regarded as of much importance, may be useful when the reader shall be making the first essay in this wonderful and interesting branch of photography.

There is no doubt whatever that some subjects are far better for translation into photographs in natural colors than others, and here the independent amateur can score heavily over his professional brother, who, for commercial reasons, simply has to make color pictures of subjects required by his customer for advertising and other purposes. That the subject may not be the best for color photography probably has not entered into the customer's mind, except that he requires its colors set forth in permanent form for some purpose of his own. The professional has to do his best, but if the resulting transparency fails to please it will in all likelihood be due less to the fact that it is not a faithful translation of the subject than that the latter was not well suited for a picture of this kind, and in this case it is certain that a good black-and-white print would have been more effective. Such cases as this tend to give color photography a bad reputation. No painter could be expected to sit down and make a masterpiece of any subject that may be pointed out to him, though he could make a fairly faithful transcript of it. The result, however, would not be a picture. Now, because it is possible to produce photographs in natural colors, it does not say that every subject is going to be satisfactory as a color photograph either from the point of view of the artist or the photographer. I would point out to the amateur beginner in color photography that the art of producing pictures by its means is one not to be caught at a grasp, but demands much training and experience before the eye can recognize what will and what will not make a picture. But I am digressing. Let us then consider the subjects offered for color photography in a general way from various aspects.

The photographer must beware against letting his imagination run away with him to the extent that color prevails in Nature. Few people realize that under some aspects every landscape is a monochrome. Yet I have known color plates exposed upon such subjects. A faithful rendering was produced, I grant, but one that was no better, and perhaps inferior to a good black-and-white print. Every photographer who proposes making a color photograph should examine the subject carefully with a view to ascertaining exactly how much color there is in the *subject*, and how much exists in his own *imagination*—or, to take a similar case, the *colors* may be existent in the subject but the lighting may not be from the right source or be brilliant enough to show them up in sufficient brilliance. To take a simple instance, let us consider a larch wood just breaking into its delicate shades of green upon a fine sunny morning in late spring with the sun behind the observer's shoulder. Now examine it again at the same time on the first dull day, or later in the day when the sun is behind the wood. The colors in which the young green growth appeared in the first instance have all gone, and the scene is in monochrome, composed of a very few shades of the same dull color. Now if the scene was photographed at each time on a screen color plate each picture would—other things being equal—be a faithful transcript of the scene as it was. As a color picture the one would be a success and the other a failure. If any of my readers in the course of their experience of color photography by the screen plate processes have results in their possession, dull, lifeless, and lacking in color brilliance, they should consider if the fault is a technical one, such as error in giving the exposure or in some subsequent operation, how far the lighting of the subject was the cause, or to what extent it possessed color at all, and if the fault does not really lie in their own imagination, coupled with a lack of the observing faculty, instead of blaming the color process. Without seeming to press this point unduly, I would urge every beginner, and those who have not produced results as good with regard to brilliancy of color rendering as they desire, to consider this point very carefully.

For vivid color effects, of course, late spring or early summer is the time to be chosen, and, without doubt, early morning or late afternoon is productive of the best results, according to my own experience. In the middle of the summer the foliage has a more dull, heavy appearance, and the finer color gradations between trees of different species have for the most part disappeared. Mid-day is also a time to be avoided. Autumn, with its vivid colors, the thinning of the foliage, and soft, golden lighting, is also ideal for color-photography of woodland and landscape compositions, and I know of no subject that color processes render so well as a beech glade with its carpet of russet and gold made by fallen leaves, the silver boles of the trees turning to a rich mossy green at their bases. But this is a subject that requires brilliant lighting.

The composition of color subjects and the arrangement upon the plate call for a word or two. It is important not to have an inequality of lighting or this will throw the deeper shadows of the picture into a dull monotone. If there is a strong mass of color at one side of the picture, it is necessary that there should also be one on the other, even though the latter be smaller, in order to balance the picture. It should be the effort of the photographer to distribute his colors in the form of masses of light, shade, and color with a view to forming a satisfying restful pattern or design. In this respect the position of the camera has much to influence the production of a good result or a bad one, and the design or pattern of the picture, the disposal of its lights and shadows, is one that should have far more consideration from the photographer than it usually gets. Some time ago I was shown some color-photography done by a commercial photographer for illustration work in a gardening handbook. The subjects were herbaceous flower borders, set out by an artist in landscape gardening, but the composition of the pictures, as pictures, was decidedly faulty. In one of the pictures, depicting the pleasing curve of a border round the lawn, the difference of a few feet would have made a decided difference to the artistic value of the picture, and would have composed the whole into a pleasing pictorial design, while a graceful curve of the turf was rendered sharp and unpleasingly angular. Even commercial photography of gardens makes some demands upon the color photographer in the matter of design and the artistic arrangement of the picture. I should advise all color photographers to study form and color both from the works of master painters, and from a good art text-book dealing with this subject, since it has a greater bearing upon a successful result than many imagine. Many photographers do not realize the marked difference in this respect between color-photography and ordinary monochrome work. With the former we arrange our picture according to the light and shadow tones and values, but the color-photograph depends for its artistic success upon the arrangement of the elements of its composition as colors, each separate color having its part in the general design, the whole of which produces or spoils a satisfactory picture.

The treatment of the color subject also has a marked bearing upon a good result, since no modification of the definition or values of the pictures may be attempted. For the most part a fair sharpness is demanded over the whole planes of distance since fogginess in a color-photograph is not desirable. There is no objection, however, to a slight softness in the receding planes, but the principal object itself should be focussed with as critical a definition as is possible.

In landscape color work I have sometimes been asked if a figure tends to improve the general scheme. This, however, depends very largely upon the composition, but as a general rule I think that a figure—preferably a feminine one—does have a good effect upon the picture as a whole. For most commercial work it is desirable as supplying just the touch of human interest that is demanded to make an ordinary scenic or garden picture take the observer's eye. On the other hand, it is a difficult matter sometimes to decide where the actual picture is to leave off and the portrait or figure study is to begin. I do think that most commercial photographers put the figure too far from the camera, and in this way handicap themselves considerably in the way of producing an artistic result. Often the touch of color supplied by the model's dress is the saving point of interest in an otherwise rather dull scenic picture in the form of a lantern picture.

One word I would add in conclusion. With ordinary photography it is possible by various methods to modify the result. If, for instance, the subject is inclined to be weak it is a fairly easy matter to remedy the defect by recourse to combination printing, or by strengthening lights and tonal qualities. In color-photography there are no such methods available. Every picture must be reproduced straight from the subject itself, and must render the subject as the subject *is*. As far as possible the photographer who strives for artistic beauty in his results, and who is not tied by the requirements of other individuals in the matter of the selection of his subject, should make a choice from the abundance that surround him of such material as will produce a pleasing result by a mechanical translation of its own existing beauties. One thing is certain. If the results fail to please, and the fault cannot be conscientiously laid on the score of bad technic, then the best choice has not been made in the subject. Given a good subject, well lighted, carefully arranged upon the plate, color-photography by the screen-plate process may be absolutely relied upon to give perfect results in the matter of color translation, and with an accuracy that the most expert artist with brush and pencil may crave for in vain.—ROBERT M. FANSTONE, in *B. J.*

Enamelling Prints and Postcards

LAST year I gave a method of glazing or enamelling prints, using polished celluloid, and a domestic clothes wringer as squeegee. For prints to be used as originals for copying, celluloid gives a good surface, but for commercial postcards glass gives a much brighter surface, and the domestic wringer with India-rubber rollers is an ideal squeegee, giving absolute contact and removing so much more water from the cards or paper than possible with ordinary flat or round squeegee that the prints are dry in a quarter the time, and the risk of sticking from damp paper and long drying is reduced to an absolute minimum.

The following method cannot fail if once the plates are cleaned and properly prepared:

The ordinary domestic wringer with India-rubber rollers is usually 12 in. wide; two postcards placed end to end measure 11 in., so it will be best to provide plates 11¾ x 14½, good 15-oz. sheet being satisfactory; plates this size will hold eight cards, and are a nice convenient size for handling.

The first preparation of these plates must be thorough, so as to get them into good working order; once this is done no cards can stick with reasonable facilities for drying.

First of all, remove the sharp edges of the glass by rubbing with a piece of corundum or carborundum, next soak in weak acid water (nitric, sulphuric, or hydrochloric), and clean the surface by rubbing with a rag. Rinse the plate and stand on rack to dry. When dry lay on sheet of newspaper on flat bench, and rub over the plate with a dry rag dipped in vaseline, taking great care that every part of the surface receives a coat of vaselin. The surface of sheet-glass is not so level as it looks, and it is surprising occasionally to see that small pools of surface often require extra attention to get them covered.

When the plates are all vaselined, dust them over with French chalk, and rub this gently into the vaselin. Then take a clean cloth and polish away the whitey film of vaselin and chalk, this polishing resulting in a beautifully polished plate.

The prints being ready are placed in position upon the polished plates and passed through the wringer. Great pressure is not required, only just sufficient to require the handle turning.

The squeezing pressure of the India-rubber rollers not only ensures absolute contact of print to glass, but most of the moisture in the cards is also removed, which, of course, tends toward much quicker drying. The prints or postcards may be soaked in water, or in any of the solutions sold for preventing sticking.

There is one cause of prints sticking when dried upon glass which has not received the attention it deserves, viz., the method of drying.

Drying takes place quicker and with less risk at a low temperature and with brisk movement of air than at a high temperature and in a stagnant atmosphere.

An electric radiator in a room 12 x 10 x 10, with window open at top 12 in., will dry a good quantity of prints on plates stood upon racks standing between radiator and open window. Where electricity is not available, an upright gas radiator of six columns will be as efficient (and cheaper). Where neither gas nor electricity is available, a small Primus stove of the roarer variety, with occasional attendance for repumping pressure, is also efficient, but never attempt to utilize an ordinary paraffin stove with a wick, which always behaves so well when carefully watched, but if left alone for a few hours the result is disastrous—the stove smokes, and the proverbial inch-thick of soot is deposited.—W. T. WILKINSON, in *B. J.*

The Technic of Print Spotting

DUE to the many request for information as to the best method of spotting Cyko prints this article has been written—not because the method necessarily is the best, but that those who are not obtaining the results desired may have the benefit of the experience of another to aid them in their work. As one photographer says, "I understand what to use, but it is the technic or method of application that bothers me."

The most particular photographer, as a rule, has the least spotting to do, although accidents will happen. It is well known that the occasion for extensive spotting comes from careless manip ulation somewhere from the unexposed plate to the finished print, but one sometimes becomes careless unconsciously.

The average pin-hole spotting is really the least difficult to handle. The big scratches in draperies, backgrounds, and even in faces, are the accidents that are so discouraging, and unfortunately they seem bound to occur on the most valued negatives or those which cannot be re-made.

Transparent tints should always be used—that is, the pigment should be reduced in density with water rather than with opaque white, for with opaque tints one is never sure of the exact shade required on account of their drying out lighter than when they are applied. The reason for this is that the print itself is transparent, and that all its brilliancy comes from light reflected from the paper base through the emulsion; therefore all spotting should take on the transparent character and texture of the surrounding silver deposit.

We find that lampblack, sepia, and India ink are the most satisfactory pigments for all black-and-white prints — lampblack for cold black tones, and sepia or India ink for warm blacks. All so-called sepias, brown or warm-brown toned prints, may be matched identically with raw or burnt umber used alone or mixed with one of the blacks mentioned. Raw umber should be used for warm browns, and burnt umber for cold browns. These water-colors can be purchased in small pans or tubes at any art store, and they will last for years as only a small amount at a time is used. The brushes required are the Nos. 0, 1, and 2 sable. A divided white china or earthen pan for mixing colors and washing out tints is desirable, although an ordinary saucer or other small white dish will do. Care should be taken in selecting or mixing the pigments to have them match. The next step is to wash out to the desired tint with water or saliva. The chances are that saliva will prove more effective in your technic than water, as one seems instinctively to point the brush, or wipe it out if the color is too dark, with the tongue or lips. It may not be hygienic, but it does the work, and it is the general practice among the best workers to do this; of course, it is best to be particular, and if this method is used all brushes and plates should be marked for identification.

The very common white spot is covered easily with a dot, using a No. 0 or No. 1 sable brush brought to a point with the lips, and small patches on skies or plain grounds are filled in with stipple until they match the surrounding tone. For large patches we sometimes use fine cross-hatch lines, expecially in draperies, to match the surrounding texture. In filling in foliage all that is necessary is to follow the surrounding composition of single leaves, clusters, masses, or branches. In grass plots or fields it is very easy to replace lost detail by drawing in the grass, weeds, or stones; even parts of fences, stone walls, rocks, or buildings can be replaced by careful study and handling, so that the defect is not noticeable to one not versed in art work.

In portrait studies, parts of chairs, tables, the hair, draperies, even finger and face modelling can be replaced by the careful worker. In machine and technical work the clever artist can often save a valuable print that otherwise would entail much labor and expense to duplicate. Again, a negative from which a print must be made may be cracked or broken, and with a little pains prints from such negatives may be filled in so that the marks are not noticeable. These cracks usually take a diagonal direction, which is fortunate, as the different tones through which they pass are then broken masses of light and shade, and when filled in to match with pigment become practically invisible to the eye.

We have been asked many times for a method to produce invisible spotting on glossy paper and glossy ferrotyped prints, but we have not found a mixture that would dry with the paper gloss. However, in our opinion this is unnecessary, for the reason that on a high gloss print spotted by the methods given the spots are, in effect, lost unless one looks for them.

While it is not really spotting, there is another treatment which often helps out otherwise mediocre prints on platino or semimatte surface, especially in white, chalky skies, or white masses in drapery or backgrounds. This is the use of crayon or lead scraped from a pencil rubbed out with powdered pumice-stone to the right tone, then applied to the print with a tuft of cotton. The necessary high-lights are then produced by wiping out with a pointed soft rubber eraser. Very pleasing effects are obtained, which are hardly distinguishable from the real photographic portion. In our opinion it is much superior to the air-brush because of its being less mechanical.

Another pleasing variation is made with broad washes on white background portraits or on draperies to give a hand-painted or brush effect, which truly adds a distinctive touch. This treatment might also be used to advantage, if well applied, to landscape, genre, or figure studies, giving the effect of wash drawings. In connection with this it is well to state that great assistance may be obtained in giving character and individuality to pictorial photography by studying the work of present-day artists in black-and-white in the best of the popular illustrated magazines, also the photographic illustrations of Lejaren á Hiller, who combines painting with the print. In this type of illustration the backgrounds and accessories are painted on the print, and then the combination is copied for reproduction. The method used is monochrome tempera, or distemper, which is a combination of opaque black pigment reduced in tone by the mixture of Chinese white as required, using water or a thin glue size as a medium, and applied the same as oil-colors. India ink, sepia, or lampblack are usually preferred.

There is an unlimited field for the photographer who is able artistically to combine a natural or acquired talent for drawing and painting with photography, and who is able to produce prints with exceptional merit and characteristic quality that give both pleasure and profit.

If the negative contains holes or scratches which will show black patches in the sky, middle tints or high-lights, it is best to spot these out in the negative with heavy opaque, giving a blank white spot in the print, then fill in to match the tint; but if a hole shows in the foliage, shadows, or grass, the foreground should be broken up with thin pigment to match the negative density and detail, and thus avoid any but the slightest spotting of the finished prints. It should be remembered that the print is a blending of light and shadows of the same color, and that black spots and lines in deep shadows require little or no attention.

Water-color pigments are mixed with a size, but if trouble is experienced in making colors adhere, especially to glossy surface papers, any sticky substance, like albumen, gelatin, gum arabic, or sugar syrup, may be added in mixing the tints.—W. H. Smyth, in *Portrait.*

Photographic Materials and Processes

Photographic development; Chemical induction in ——. I. Induction and the Watkins factor. S. E. Sheppard and G. Meyer, Communication from the Research Laboratory of the Eastman Kodak Co. Phot. J., 1920, 60, 12—21.

The accelerating effect of small quantities of potassium iodide on developers, first observed by Lainer in 1891, is only slight except with developers such as glycin and quinol, which have low reduction potentials or high induction values. In most cases the effect is merely on the induction period, the Watkins factor being increased. With a quinol-carbonate developer, however, there is also a marked alteration in the degree of development (γ), particularly at low temperatures. The accelerating effect starts at very low iodide concentrations, rises to a maximum at which it remains over a certain range, and then rapidly falls to a minus quantity; with quinol, for instance, the maximum effect occurs at concentrations from $N/1000$ to $N/100$, and retardation is obtained at $N/35$ upward. The possible nature of the iodide action is discussed, especially in connection with the suggestion, previously made, that the first stage in development is formation of a complex of silver halide and reducer. Experiments on the absorption of safranine by silver bromide, without and with iodide treatment, are adduced in support of this view. Plates bathed in dilute potassium iodide solutions ($N/1000$ to $N/100$), washed and then developed give fog. If such a plate, after washing, is fixed and then developed in an acid developer, a black, coarse-grained fog appears, different from the usual fine-grained image obtained by physical development. It is suggested that the fogging effect is due to a nucleus infection of the silver bromide grain.

Photographic rendering of contrast; The fundamental law for the true——. F. F. Renwick. Phil. Mag., 1920, 39, 151—154.

Since the characteristic curve of a plate expresses the relationship existing under certain conditions between the light gradations of an object and those of the resulting negative, and a similar relationship between the negative and the print is obtained from the characteristic curve of the printing material, a combination of these curves will show the relationship between the object and the print. This method was referred to by the author in 1916, and in view of a recent reference by Slade and Porter (Phil. Mag., 1919, 38, 187; is now explained in detail. Two instances are given, a neutral-tinted grainless wedge being taken as the object, this giving a very convenient means of impressing a known series of exposures, changing in the same way as do the values of log E along the exposure axis of a characteristic curve. In one case the correspondence between print and object is deduced from known curves for negative and positive material, and in the other the requisite curve of the positive material to obtain a desired print from a known negative material.

Color screen plates or films for photography in natural colors; Manufacture of ——. M. Wieland, Berlin-Tempelhof, Germany. Eng. Pat. 137, 502, 29.8.19. (Appl. 21,263/19.)

A phenol-formaldehyde condensation product is used as the medium in a multi-color screen. A suitable coloring material is added to the phenol and formaldehyde and the mixture atomized before the condensation is completed. An intimate mixture of different colored globules so obtained is dusted on to a prepared plate, the excess dusted off, and the plate then heated so that the globules soften and coalesce, and the hardening process completed by heat, and, if necessary, by pressure. A final coat of colorless condensation product is then applied. The resulting screen is unaffected by heat and ordinary solvents.

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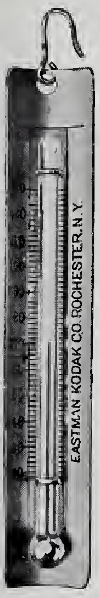

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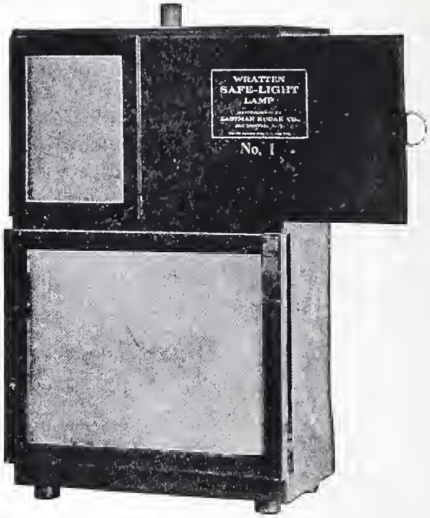

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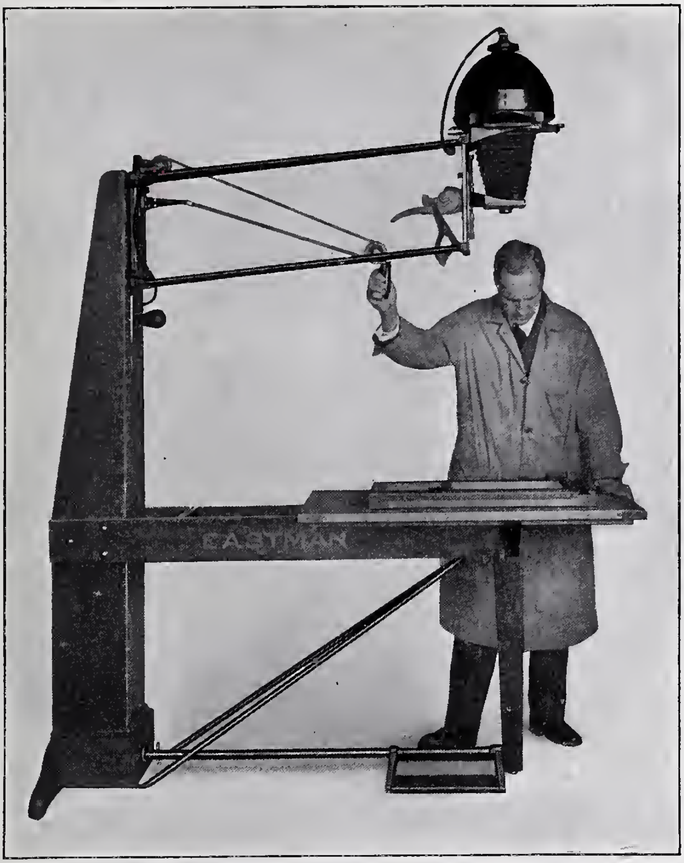

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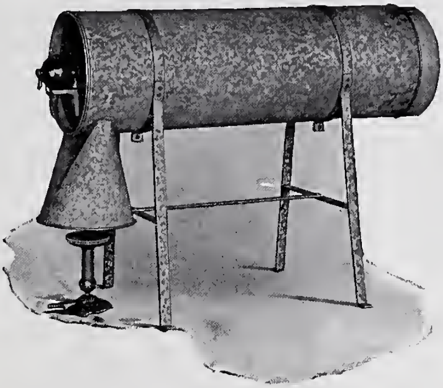

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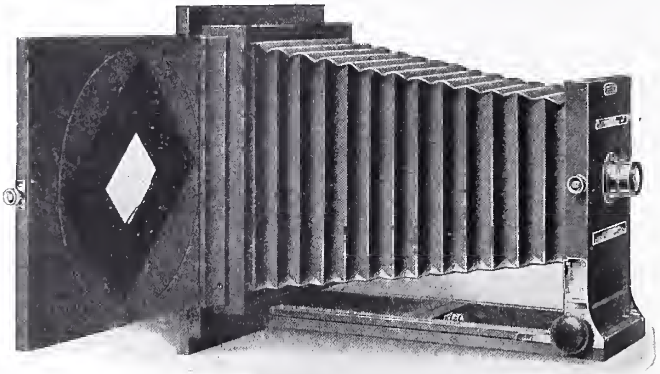

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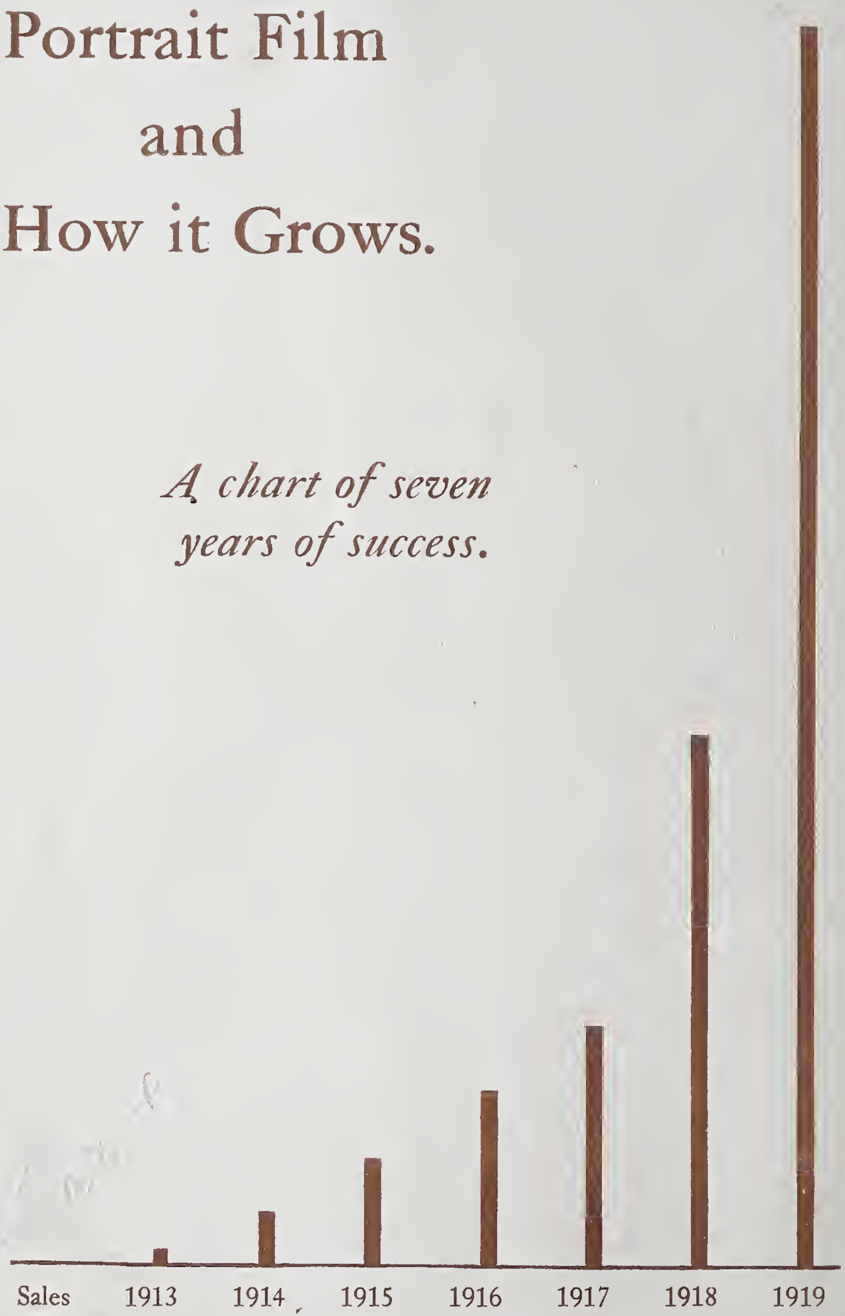

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